This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

THE SANITARIAN,

AND

ORGAN OF THE

MEDICO-LEGAL SOCIETY.

A MONTHLY MAGAZINE.

DEVOTED TO THE PRESERVATION OF HEALTH, MENTAL AND PHYSICAL CULTURE.

A. N. BELL, M.D., Editor.
J. Y. CULYER, C. E., } Associate Editors
T. P. CORBALLY, M.D., }

VOLUME V.

NEW YORK:
THE SANITARIAN.
82 NASSAU STREET.
1877.

Entered according to Act of Congress, A. D. 1877, by A. N. BELL, in the office of the Librarian of Congress, at Washington.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. JANUARY, 1877. No. 46.

PUBLIC HEALTH REFORM.

By J. R. BLACK, M.D.

The popular opinion of the physician seems to be that his only ambition is to cure disease, and thereby gain for himself riches and renown. While this may be an accurate expression of the general aim in life with some of them, it is far from being so with all. Coeval with the existence of medicine as a science has been the reiterated expression of a higher duty pertaining to the office of physician—to wit, to do all in his power to prevent as well as to remove disease. And many of the greatest and noblest that have adorned the healing art have urged by word and deed the necessity of greater attention and of a more intense devotion to prevention, as one of the sacredest and noblest of duties. Hyppocrates uttered many sound maxims on the public health, and gave some excellent precepts on the location of cities. Celsus wrote largely on hygiene, and the whole of the sixth folio volume of Galen, edition of Chartier, is devoted to the preservation of health. Sanctorius, Cheney, Sinclair, Arbuthnot, Sydenham, Huefland, not to speak of a host of modern writers of distinguished repute, have all written largely and admirably on the preservation of health. But far more by deeds than by words have physicians contributed to the diminution of disease. Prior to the time of Dr. Jenner, while Europe had scarce half her present population, four hundred thousand persons annually were either destroyed or disfigured for life by small-pox; at the present day not one-tenth of that number, amid her teeming millions, now meet with such misfortunes. Little more than two centuries ago the population of Europe was decimated every few years by the plague. All the precautions the populace could be induced to take against it were such as the priests directed—to pray, fast and put a red cross on their doors with the invocation, Lord have mercy on us! Fortunately France had the temerity to adopt the advice of laymen, of her physicians, and established a systematic quarantine as a bar to its progress. The project was bitterly denounced as a profane attempt to interfere with the just judgments of heaven. Yet that power blessed the effort, helped those who helped themselves against the fatal

scourge, for from that time it has almost ceased to exist, and never more invades continental Europe.

Two hundred years ago ten thousand seamen were annually lost to the British navy by scurvy alone. This terrible destruction of life was one of the greatest obstacles to commercial enterprise and to the supremacy of the seas which England, or in fact any other country, had to encounter. Through the light and labors shed upon the subject by physicians this disease is now almost unknown, and what was once regarded as the manifestation of wrath by a deity supposed to be offended at the cupidity of man, is now known to be due to no other cause than a violation of a law pertaining to diet.

It was only a few years ago that the English nation thought to take refuge from a threatened invasion of cholera by fasting and prayer; whereupon Lord Palmerston reminded the petitioners that the proper observance of what sanitarians direct, would do far more to stay its progress than all the prayers of a united but inactive people.

It is a significant fact that all our oldest and best physicians and surgeons are almost without exception enthusiasts on the subject of preventing disease. A bare enumeration of those who have taught and done notable things on this head, who are said to be almost monomaniacs on the subject, would show that the list embraces almost all the great and good of the medical profession. This is but a natural outcome of the philanthropic minds among them, through the reflections induced by their occupation.

As soon as the physician gains a large practical acquaintance with disease; when he has seen for day after day and year after year the incalculable amount of suffering, of grief, anxiety, distress and misery which the prevalence of disease produces, and which he is well aware could, with some exceptions, have been prevented, it needs a heart more than ordinarily hard not to be touched with pity and alive with hope that the day may come, and speedily, too, in which this mournful loss of health and unnecessary destruction of life will cease. The physician sees far more of disease than any one else; he knows how many there are apparently well who are the victims of some secret malady or of some annoying defect that embitters existence, and which he is often wholly powerless to remove.

Constantly moving amid this throng of sufferers; his life, so to speak, steeped in disease, is it any wonder that he should be led to desire, in apparent antagonism to mere pecuniary considerations, to diminish the prevailing suffering he sees on every side, as well as to prevent the immense and steady accession of fresh victims from the ranks of the young and the innocent?

I would ask the attention of those cynics who nevertheless doubt the honesty and disinterestedness of the medical profession in their desire to abate the prevalence of disease: Who compose the great body of self-sacrificing workers in the American Public Health Association—men who leave their business, travel hundreds of miles and spend no inconsiderable time and money in gathering facts, delivering addresses, and endeavoring to awaken an interest among the masses to save themselves, or let others do it for them, from the grasp of disease?

Who is it that has studied with unwearied and unrequited zeal the

modes by which infectious diseases are propagated, proclaimed and has proved typhoid fever, cholera, small-pox, yellow fever and syphilis to be almost, if not entirely, avoidable? Who are the most urgent advocates of vaccination as a safe-guard from small-pox? Who was it that stamped out cholera as an epidemic in New York during its last visitation; who has exposed and denounced the criminality of producing abortions, but the only class who can profit by its performance; and who has been the most persistent advocate of attempting to limit the spread of syphilis, a disease that gives the urban physician as much if not more profitable work than any other? To one and all the answer must be, physicians. Surely, in the face of evidence like this, no one will so far discredit his own fairness and intelligence as any longer to declare that their attempts to organize State boards of health for the prevention of disease, "is simply a plan on the part of the doctors to fleece the people."

Neither the madness of ignorance nor the insolence of a narrow-minded spirit ever spoke more consistently than in that. But it may not be clear to those who have not studied the subject, how a State organization can be especially instrumental in the preservation of the public health.

In endeavoring to make the claims of the subject plain to every reader, it is proper in advance to state that during the last twenty-five years the knowledge of the causes and applications of the means to prevent the spread of infectious diseases has progressed to a remarkable extent. The mode and the means by which the various infections are propagated, the conditions that favor their diffusion, and the plans most successful in arresting their spread, have all been carefully investigated and brought to a perfection, without precedent. The well-informed sanitarian no longer feels himself helpless to stay the progress of pestilential disorders; he is now enabled, as never before, to discern and to succeed in extinguishing many infectious foci, whereby disease and death are carried to hundreds and thousands of homes.

But in letter, spirit and practice nearly all these achievements of sanitary science are, to the people of many civilized regions, mere dead knowledge. Of the fact that there is a science of public health there is only a dim recognition, and scarcely more than a blundering attempt in practice. It might as well, for all the benefit its practical applications confer, be non-existent.

Imagine the knowledge of electricity and magnetism to be as great as it is, but for the lack of competent persons to render the benefits it is capable of conferring practical, these forces to serve no useful purpose in the arts, to contribute nothing to the comfort, convenience and commerce of the world through instant intercommunication, and some conception may be formed of the difference between knowledge unused and knowledge turned to practical account.

By a spontaneous movement in all the principal cities of the States in organizing boards of health, the people have made an elementary attempt to reduce the science of public health to practice. In this they are ahead of their legislators in the requirements of the age, and in the protection to which their health and lives are entitled. But, as the movement to utilize this important branch of

knowledge did not spring so much from experts in sanitary learning as from the impulse of the masses, its management, scope and functions are necessarily crude and imperfect. The boards are apparently organized on the principle that when a man becomes a successful merchant, grocery-man or saloon-keeper, that that makes him a competent sanitarian, well fitted to administer a most important trust. With an equal show of reason might it be supposed that these occupations could also convert him into a chemist or a geologist.

A distinguishing feature of modern civilization is in the ever-growing necessity for an increased subdivision of pursuits. In no other way has it been found practicable to attain the highest excellence in results. Men, or classes of men, have to devote their whole lives to some special department of art or science, in order to master its details and become skilled as specialists. A person cannot hope, for instance, to become a respectable chemist or geologist except after long years of study and toil, so extensive and intricate have their scope become. These branches have again become subdivided into analytic and synthetic, organic and inorganic chemistry; into physical and paleontological geology. In either of them no one can become a skilled specialist except after devoting the best years of ordinary life-time. The same subdivision of pursuits has become necessary to superior excellence in the practice of medicine. In lieu of doctors for all ailments, as almost universally obtained half a century ago, there are now surgeons, obstetricians, gynæcologists, oculists, aurists, and special physicians for the nerves, lungs, throat, etc., etc. No one can gainsay the obvious truth that the special study of, and the exclusive practice in one thing, tends to the promotion of exceptional skill.

When the State requires the services of geologists or chemists, it would act very unwisely to select any other than leading specialists. In all such matters incompetence at any price is dear. For reasons exactly similar should specialists be chosen to administer the provisions of a sanitary code. The duties are the very opposite of mere clerical routine; requiring foresight, judgment and accurate scientific knowledge to an eminent degree. Take in illustration the outbreak of infectious epidemics in any portion of the State. Each one has its peculiar mode of propagation, and if it is to be met, limited or extinguished, peculiar methods for doing so must also be adopted. Scarlet fever, diphtheria, cholera and typhoid fever extend their ravages through wholly different media, and to stamp them out, it is not only needful that there should be expert supervision, but that this should be prompt, systematic and concerted. In this way only is it possible to hold infections under control or to extinguish them *in toto*. No one is better aware than the sanitarian, that the time to do this is while the infectious disease only appears as a spark here and there. The moment it becomes an extensive conflagration the ability to control it is lost. The seeds are then here, there and everywhere, and will only die out when the supply of fresh victims is well nigh exhausted. Yet this is the very time usually selected by boards of health in which to act. The disease once alarmingly prevalent, they set to earnest work with their methods of prevention, effecting some good through the inspiration of hope, but next to nothing in the destruction of the infectious principle. Such a method is worse

than careless, it is criminal in the needless extension of suffering, and in the appalling loss of life. It is a disgrace to any city and the age in which we live. Let the fact be at once and forever understood that, nowadays, there is no excuse, no apology for any municipality that allows any dangerous infectious disease to assume the proportions of an epidemic. A lingering prevalence there may be by constant importation, but a devastating epidemic, *never*.

As at present managed, the science of public health does not accomplish a tithe of the good of which it is capable. In some of the larger cities of Europe, where the governments have had the wisdom to utilize it through skilled specialists, although the difficulties to be overcome are far, far greater than what pertains to any of the larger cities of the United States, their death-rate is actually far below our own. That of London is 21.4 for each 1,000 inhabitants, of Paris 21.1, while in New York it is 32.9 and Boston 30.5.

The difference of the death-rates cannot be attributed to a difference in climate. The climates of those cities have not changed in 200 years, yet the death-rate of Paris during that lapse of time has been 50 for each 1,000 inhabitants, and that of London yet more. The superior healthfulness of these old cities, notwithstanding the enormous odds against them, as in the immensity of the aggregation, the ancient and faulty construction of the houses and streets, the filth saturated soil, the relative scarcity of wholesome food, the high price of fuel and the great extremes of poverty, can only be referred to the fact that their governments bring the wisdom of sanitary science into practical operation for the advantage and benefit of their people.

It is not, of course, to be expected that physicians fully competent to act as health officers can be had everywhere, or that corporate authorities would always have the wisdom to appoint them if there were. It is not every one, for instance, who is aware, through the researches of Liebermeister, Budd, Pettenkofer and others, that typhoid fever spreads almost exclusively through the dejections of those sick of the disease, and therefore that such evacuations should never be thrown into a vault, sewer, or upon the open ground, but should be disinfected and then buried.

Nowhere in this region is this health and life-saving expedient recognized and adopted.

The same old careless, dark age methods yet prevail; and consequently the reign of suffering, disease and death are at this moment holding their usual uninterrupted and unnecessary sway in thousands of households throughout the land. All this, too, is purely the result of ignorance or neglect, and of the refusal on the part of the States to utilize the most beneficent of all sciences, and secure to the people that protection to their health and lives which the progress of the age has rendered possible. The plea cannot be entertained that the modes of doing this are difficult or impracticable. A printed slip of the requirements and the instructions left at every house infected with the fever, would generally receive implicit and close attention, if from no other motive than the dread of its extension.

The extension of other diseases of a fatal character is allowed everywhere to do their deadly work unmolested. Only a few months ago an additional illustration came within my notice. On a densely populat-

ed street diphtheria of a malignant type made its appearance. One victim after another was taken from the families of the vicinity. A local terror reigned. Yet nothing was done by the proper authorities to arrest its extension. All that was done was the work of the parents, in keeping themselves and their children aloof from the infected houses—yet the disease mysteriously spread. At last an intelligent clue was gained to the mystery of its propagation. Infected rooms were fumigated, clothes disinfected, and above all, the sputum from diseased throats was no longer carelessly dropped upon floors, carpets or upon the open ground, to dessicate and rise as an infecting dust, but carefully collected between the leaves of an almanac and then burned, with the result of the total disappearance of the disease in a few weeks.

But all such obstacles to efficient administration would be obviated by properly organized central boards, by whom appropriate instructions could be made. What little attempt there is in making public health a practical science, as in our local boards of health, is carried out in a very careless, imperfect and usually ignorant manner. It has neither energy nor concert of action. The jurisdiction is limited and imperfect, the official appointees mere political favorites, or the needy recipients of public assistance. They cannot hinder the importation of any infection; they are never consulted except about a nuisance; they are in no sense the guardians and conservators of the public health, or the administrators of a science, but the mere overseers of some police regulations. When a dangerous infectious disease appears, little is usually done for its arrest until it assumes the proportions of an epidemic, and even then the sum of the effort to check or abate amounts to little more than this: "Be ye clean." All this is little more than a burlesque on the scope and functions of public sanitation, and yet, such as it is, the public seem willing to sustain it.

A practical realization of the incalculable benefits efficient public sanitary supervision is capable of effecting, can only be attained by a radical change of the existing system. The most accomplished proficients in this science can neither make their science nor their skill available to the public except through appropriate legislation. They might, for example, denounce the toleration of allowing any one sick or abounding in the infection of a dangerous disease to travel wherever he lists; they might denounce the culpable ignorance or neglect which in all densely populated localities does nothing to prevent the spread or to stamp out the infectious germs of diphtheria, typhoid and scarlet fever; they might do all this and much more, only to show more fully their utter helplessness to prevent any place or person abounding with a dangerous infection from scattering the seeds of disease and death *ad libitum* on hundreds of unsuspecting victims.

Every dangerous infection should be regarded by the law as a public enemy, and one which it is the duty of legislators to do all in their power to limit or suppress. Concerning the practicability of doing this there is but one opinion among all sanitarians. The plans and means have been frequently tested, and have not failed, except when hampered by restrictions or crippled by inefficients, in accomplishing all their projectors anticipated. Sanitarians have so far perfected

their science, that they think it high time to offer it as a boon to the public, and one, too, than which none of greater promise was ever made. It proposes not only to promote the general prosperity and well being, but to preserve health, extend life, and save thousands of persons from untimely graves. It holds that there are hundreds killed every year by strictly preventable diseases, to where there is one by the knife or bullet of the assassin.

To accomplish all this, it is only necessary that sanitary knowledge in all its public aspects shall no longer continue a dead but an applied science, and to make it so, two things are indispensable: legal power and skilled administration. Legal power would secure organized and concerted action, efficient administration all the immense benefits the science of public health is capable of affording. And now let us see what some of them are.

Suppose the central officer of a State, apprised by the local health officers of the prevalence of some dangerous infectious disease within its limits, immediate and concerted action could be taken to prevent its spread, and if possible to effect its extinction. Every person so infected should be treated as he really is, a temporary though unwitting enemy to the public weal. His body is charged and disseminates the seeds of disease and death. He should, as far as possible, be segregated, all infecting matter from his system destroyed, the liberty of the street and of traveling upon the highways prohibited, until his clothing and body are properly disinfected and certified to by a competent officer. In this way such outrageous occurrences as the following would be prevented: Closely veiled ladies, fully broken out with the small-pox, traveling for hundreds of miles in railway cars; others who have had this disease in a mild form appearing at will upon the highways, every movement of their bodies throwing off a little cloud of infecting dust; children just convalescing from scarlet fever appearing upon the street and in public conveyances, exfoliating highly infecting epidermic scales from their bodies upon all around them; and those sick of cholera or typhoid fever scattering through their dejecta the seeds of disease and of death upon all in their environment. The easy and rapid mode of modern intercommunication facilitates the diffusion of infection as never before; the infected sick can even travel for long distances with a comfort little less than in a sick-room, the whole resulting in one town or city infecting others with unexampled rapidity, and making all throughout the State the partakers of a common danger to their health and lives. Are the people entitled to no protection against public enemies of this nature? Or will they and their law-makers forever continue to disregard the deliberate judgment of all wise sanitarians that such protection can be rendered? Surely the protection of life is one of the most sacred functions of the law; and it behooves legislators to be in some keeping with the progress of the age; to go a step beyond the primitive legislation, which only attempts to shield life from its conscious enemies, and does nothing or next to nothing to shield it from less tangible, but far more dangerous foes.

By the *intelligently* collected and careful comparison of the vital statistics of the various towns and cities of the States, the much greater prevalence in certain places of peculiar conditions unfavorable to

life would be brought to light, the causes systematically investigated, public interest aroused, and properly directed efforts made for their removal. When a man has lived a long life-time almost free from disease, it is often highly instructive to inquire into the conditions which contributed to his longevity. But it would be far more instructive, and of far greater public utility, to learn what the conditions are which render this or that town or city a model of good health. There is not a town or city of the United States which has not its peculiar aggregate of conditions which bear favorably or unfavorably upon the health of the inhabitants.

Precisely what these are, on one side or the other, no one can tell. It appears highly probable that there are localities whose inhabitants suffer every year to an unnatural extent from some disease or class of diseases; and were such a fact once made known and attention directed to it, the resulting inquiry would be very likely to lay bare the causes, make the application of the remedy possible, and thus effect an incalculable good not only to the inhabitants especially interested, but to the world at large, through the light shed upon the production of disease.

Towns and cities contemplating expensive public improvements not unfrequently lose sight or have very imperfect notions of the main object to be accomplished. This is not simply a matter of general convenience or of good taste; but will it promote, not act as a nuisance or injury, to the general health? To gain some light on the best plans, expenses, etc., of a contemplated improvement, it is customary for the corporate authorities to visit other cities on a tour of inspection. The really vital point to be settled, its probable effects on the general health, can seldom be thus ascertained; in fact, it is scarcely thought of, or it is wholly ignored. The fact that a public improvement may be the best possible for some cities, and the worst possible for others, receives little or no attention. The consequences are that one town or city becomes simply in her improvements an imitator of other towns or cities, without the slightest regard to peculiar circumstances or topographical characteristics. Improvements made after this manner are frequently found to act so detrimentally that they require frequent modification or radical and expensive changes. Not only a great public injury but a very heavy outlay is thus oftentimes unnecessarily brought upon the people. Take as an illustration the question of the potability of a public water supply. Will a system of water-works improve this quality; or if not of the best, how can it be improved, and from whence should the supply be drawn? One of the oldest cities of central Ohio has had a dear experience in this line. Her public water supply is drawn below where some of the largest sewers vomit their filth into the river. Various devices to overcome the evil have been adopted, but with only a very limited success. To construct new water-works higher up the river would involve a very heavy outlay. So the evil is endured, and with what result? The making of that city one of the sickliest of several in that region, but which from its topographical relations ought to be one of the healthiest. Every now and then the inhabitants unwittingly bathe in, and drink of a diluted typhoid fever, and with the effect of rendering it, at a minimum estimate, ten times more prevalent than in some other cities of the same region.

The very great importance and necessity of a system of drainage for the promotion of the health of towns and cities; the proper modes of constructing and ventilating sewers, their house connections and place of debouch; the best methods for the removal or disposal of human excreta, filth and refuse matters of every kind, are all matters about which every competent sanitarian is fully informed; as without a knowledge of them, and the best modes of their practical enforcement, the general health of no town or city would be safe for a moment. Not a sanitary condition can be ignored, not a rule violated, without an inexorable exaction of the penalty upon the innocent inhabitants. It may be in the prevalence of that insidious foe to life, typhoid fever; it may be in the terrible destruction to infant life so common during the heated term, in the larger cities, by cholera infantum, through the empoisoned atmosphere; or it may be in the extraordinary and unmanageable fatality which every ordinary disease assumes. In whatever way an extraordinary and unusual mortality may be manifested, the point may be taken as settled, that that locality is subject to an extraordinary and unusual morbific cause, and one, too, strictly human in its origin.

It is no uncommon thing for a city to copy the sewerage system of another for the removal of all its liquid filth, when neither the supply of water, the grade, nor the place of debouch admit of any other effect than that of creating a fearful nuisance. The sewers become vast receptacles of stagnant accumulations of corruption, exhaling noisome gases at every aperture and house connection; the places of debouch not being under water, nor into a large and rapid current, become intolerable abominations, polluting the atmosphere of the entire vicinity, to the injury of property and the detriment of life.

Public welfare also demands supervision in the location and construction of public buildings; in the detection and exposure of adulterations in our foods and drinks; and of the sale of poisonous commodities, such as arsenical paper hangings and the like. There is scarcely a public building in any of the States, whether it be state-house, court-house, public hall, school-house, church, jail or asylum, that is constructed in accordance with the simplest requirements of hygiene. Considerations of this nature are either totally neglected or left to the management of an interested constructor, or to a patentee's device, which may be, and often is, little better than a fraud. The lungs and blood of legislators are mysteriously poisoned in the state-house chambers; a crowded court room is little better than the Black Hole of Calcutta, causing jurymen and counselors to be carried out in a faint from the intense air poisoning; and the innocents in our school-houses are frequently ruined in health for life, by a total disregard of the most elementary sanitary principles in the warming and ventilation of school rooms. Several teachers have I known sent to premature graves by the same cause, and not a few of our sons and daughters, popularly supposed to be educated to death, have simply been undergoing a slow process of lung poisoning in the halls of some college.

Are these evils unworthy of attention? Must the application of the principles pertaining to the protection of the public health forever continue to be ignored, and cannot more than nine States in the

Union be found who have the wisdom to attempt through a State board of health to arrest the enormous and unnecessary waste of health and life continually going on from year to year? If New York, Ohio and the majority of the other States continue their refusal, they may go on building magnificent asylums, infirmaries and hospitals; for with a growing population the army of the helpless and diseased will steadily increase, rendering their care and support one of the heaviest burdens of the State. Let it not be any longer said that legislators have not been duly informed, that they have not had their attention called to the wisdom, economy and beneficence of preventing all the misfortunes and suffering arising from avoidable diseases they can, but go on in the magnificent folly of spending hundreds of thousands of dollars to cure or alleviate the products of disease, but not one cent to prevent, when so much is clearly within their power.

———o———

Sanitary Carbon.—Some interesting experiments were made recently at Campbell's Sewage Works, Wadsworth Road, London, with a new substance, which is practically animal charcoal, and which will probably find extensive use at no distant date in purifying the effluent water of districts that treat their sewage by precipitation, in clarifying the waste water of dye works and mines, and the thousand and one other ways that will suggest themselves at once to persons conversant with sanitary matters. It is the product of a company that owns some 1200 acres of the district on the Dorsetshire coast where the famous Kimmeridge shale deposit is found. This is a deposit which is of undoubted animal origin, and is supposed to consist of blubber fish and other forms of marine animal life. However this may be, the shale is found to yield more plentifully than cannel coal, and at less expense, an excellent carbon, one ton of the shale, after giving off 9,000 cubic feet of gas, leaving 11·6 cwt. of residue, which is the sanitary carbon in question. This substance is found to have precisely the same properties and action for all sanitary purposes as animal charcoal that costs from £14 to £18 per ton, and the company hope to be able to produce it for one-fourth the price. The experiments adverted to consisted in running sewage through a layer of the sanitary carbon, when the effluent water came out as clear as crystal. A more crucial trial still was made by mixing sewage with a compound of ink dye stuffs in solution, forming a liquid more intractable than would ever be met with in actual drainage operations; but the result was the same, the water running off perfectly clear, with no perceptible odor.—*British Trade Journal.*

CIVIC CLEANLINESS—BOSTON.

To the Editor of THE SANITARIAN:

It is with great pleasure that I comply with your request to give you a brief description of how sanitary matters in the city of Boston appear to a New Yorker, as seen during the brief period that you and I were there, attending the recent meeting of the American Public Health Association. The daily sessions of the Association left us but little time to examine into the workings of the health authorities, any farther than their method of dealing with some of those every-day nuisances which are inseparable from cities; I refer to the manner in which the city authorities themselves dispose of their town and house refuse.

It is doubtless known to most of your readers that the slaughtering business has been removed from that city, and concentrated within an admirably constructed abattoir at Brighton. On the afternoon of Wednesday, Oct. 4th, the members of the Association received an invitation to visit this establishment, which several accepted. We found the arrangements excellent, not only in regard to the facilities for slaughtering, but also for the manner in which they immediately dispose of all animal refuse. This is accomplished by means of several openings in the floors, underneath each of which, in the basement, is placed an iron wagon, one for the reception of blood, another for fat, another for hides, etc. As soon as a wagon is full it is at once removed and replaced by another. It is not necessary here to follow these various portions of the animal to their several destinations; but it is sufficient to say that they are at once utilized and thus placed beyond the danger of decomposition.

I was very much interested in their method of dealing with garbage and other house refuse, and on Thursday, the 5th, I accepted an invitation to visit the "South End," where all of the city garbage is delivered to farm wagons waiting to receive it. The ashes and garbage are collected separately at stated hours, and their system of alleys, by which access is gained to the rear yards, renders it unnecessary to disfigure the sidewalks, or defile the pavements and gutters with every variety of house refuse and filth. At the appointed time the cartman rings the bell at the rear gate, receives from the housemaid the garbage, deposits it in a water-tight cart, which, when filled, is taken to the place above mentioned, where, from a raised platform, its load can be instantly dumped into one of the farm wagons in waiting. These farm wagons, though constructed so as to be water-tight, are provided with outlets which may be opened and closed at pleasure for the purpose of drainage; and when filled they are allowed to remain a short time for the water to drain out. The liquid draining from the wagons is received by a gutter extending the entire length of the floor, whence it passes into the sewer. This work is so systematized that it is completed early in the day, when the floors and wagons are thoroughly cleansed. The garbage is taken to the country and used for feeding swine. The ashes are collected in a similar way, and, being entirely separate from garbage or any putres-

cible substance, can be used extensively for filling low ground. The city stables were in an excellent condition, cleanly, well ventilated and drained; the horses appeared to be well cared for, and the carts not in use were clean and inoffensive. The streets are swept early in the morning, commencing about three o'clock and completing before business hours. Manure is removed directly from the stables to places beyond the city and applied to the land. The streets in Boston present quite a contrast with those of New York in point of cleanliness and the absence of obstructions; and the first feature which attracted my attention in going from the depot to the hotel on the evening of my arrival, was the absence of ash and garbage receptacles from the sidewalks, and of house slops and garbage from the gutters and pavements. I wish some such system of disposing of town and house refuse could be adopted with us, as I am confident it would have the effect to reduce the rate of sickness and mortality among our tenement population. Truly Yours,

New York, Dec. 4th, 1876. E. H. JANES.

———o———

Village Drainage.—Lenox, Mass., has been drained by a system of small, six-inch, tight sewer pipes, leading from the houses along the streets to a large tank in the open fields. This tank has a capacity of three to four thousand gallons, and is self-acting in that it will empty itself, by means of a syphon, into a system of distributing drains some ten thousand feet in united length, laid at a depth of one foot beneath the surface of the ground. The distributing drains are porous land tile, laid with open joints, so that the sewage is absorbed into the soil, which is enriched thereby and fitted for the growth of grass and similar crops. Provision is made for disposal of the sewage by surface irrigation at any time when freezing might prevent the working of the sub-irrigation, though in similar systems in use in the North it has been shown that the sewage keeps the soil warm enough to prevent freezing in the immediate vicinity of the drains sufficient to absorb all the sewage. It is said that this system is perfectly odorless, and examinations of the soil receiving the sewage for six years have failed to show any accumulation of filth. An essential part of the system is that beside the sewer pipes leading to the reservoir tank are laid land tiles to provide for the drainage of the land. At stated intervals are tumbler tanks which receive the clear water from the tile, and discharge, when full, by automatic action into the sewage pipes, thus cleansing them with a rush of clear water and preventing the deposition of sediment. This is the patented system of Mr. Rogers Field, a leading sanitary engineer of England, who, however, waives his right of royalty in favor of Lenox, as this is its first introduction to this country. Col. Geo. E. Waring has charge of the work, for which he is well fitted by his travels, study and experience.

PLAIN DIRECTIONS FOR PREVENTING THE SPREAD OF INFECTIOUS DISEASES:

SMALL-POX, SCARLATINA (SCARLET FEVER), MEASLES, TYPHUS FEVER, ENTERIC (TYPHOID OR GASTRIC) FEVER, HOOPING COUGH, DIPHTHERIA, ETC.

By J. M. MACLAGAN, M.D., Medical Officer of Health for Hexham and Haltwhistle Unions Rural Sanitary Districts, Etc., Etc.

General Directions.—I. When a case of infectious disease occurs in a house, immediate notice thereof should be given to the Medical Officer of Health or to the Inspector of Nuisances, and medical advice at once procured.

The following precautions should be taken :

1. *Isolate the person affected as much as possible from the other inmates of the house.*

This is most readily effected by at once removing him to an upper room, if circumstances permit. The room selected should be large and airy, and the means of ventilating it, which shall be presently mentioned, at once adopted.

2. Before removing the patient, the following preparations ought to be made in the room:

All superfluous *curtains, carpets, woolen articles, unnecessary clothing*—in short, *everything likely to retain infection,* should be *at once removed.*

3. The patient's *bed* ought to be so placed as to allow of a *free current of air* around it, but not so as to place it in a *draught.*

4. *The room must be kept well ventilated,* under the physician's direction, by means either of a fire (when required) or of an open fireplace and chimney, and of windows opening to the external air. By means of the latter, ventilation is most effectually procured, so as to avoid draughts, in the following manner:

Raise the lower sash of the window three or four inches, then procure a piece of wood made to fit accurately into the lower opening, and place it there. By these means free outward and inward currents of air—without causing any draughts—are obtained through the vacant space between the two sashes. *When a window is merely opened from the upper or lower sash, draughts are invariably caused.*

5. Placing a small sheet of oil-cloth, mackintosh, or other waterproof material, beneath the upper blanket on which the patient is to rest, effectually prevents the bed from being soiled by any discharges, etc.

II. After removal of the patient to the room in which he is to remain, the outside of the door and door-posts should be completely covered by a sheet kept constantly wetted with some disinfecting fluid, such as *Burnett's Solution, Condy's Fluid, Carbolic Acid, etc.*

2. The room must be kept scrupulously clean. Before being swept, which should be done daily, *if possible,* the floor should be sprinkled with *Culvert's* or *McDougall's Disinfecting Powders,* or with a weak solution of one of the disinfecting fluids already mentioned.

2. Vessels containing disinfecting fluids should be placed in the room for the reception of all bed and body linen, towels, handkerchiefs, etc., immediately on being removed from the patient, and on no account should they be washed along with other household articles.

4. Disinfectants should also be placed in all the chamber utensils used by the patient, and, after use, more disinfecting fluid should be added, and the whole contents, if possible, should be immediately buried. *No chamber vessel should be allowed to remain in the room after having been used.*

5. All plates, cups, glasses, etc., which have been used by the patient, should be rinsed with some disinfectant before being washed; and on no account should any vessels used in the sick room be washed along with other things, unless previously thoroughly disinfected.

6. Attendants on the sick should not wear woolen dresses, but only those made of washing materials.

7. Basins containing water, to which some disinfectant has been added, should always be at hand for the benefit of the attendants on the sick, who should not be sparing of their use.

8. No article of food or drink from the sick room should be consumed by other persons.

9. Visitors to the sick room, except in the case of *clergymen* and *medical men*, should be peremptorily forbidden; and they, when necessarily present, should, on leaving, wash their hands in water to which a disinfectant has been added, and should have as little immediate communication with others as possible.

III. When a death from infectious disease occurs, the body should be at once placed in a coffin and sprinkled with some disinfecting fluid or powder, such as *chloride of lime, etc.*, and *buried with the least possible delay.*

2. *On no account whatever should it be allowed to remain in a room occupied by living persons.*

IV. *On the termination of a case of infectious disease*, either when the patient is pronounced *free from infection*, or, in the event of *death*, after *removal of the body*, the sick room and its contents should be thoroughly cleansed and disinfected.

2. The bed and bedclothes, and all wearing apparel used by the attendants or patient, should be *thoroughly disinfected.*

V. In houses where a case of infectious disease occurs, no *washing, tailoring, dressmaking*, nor any similar occupation, ought to be carried on.

2. No *milk* or *food* of any kind should be supplied from infected houses.

3. *Children* from infected houses should not be allowed to *attend schools*, and *all persons* from infected houses should have as little communication as possible with others either in *private houses* or in public places, such as *railways, omnibuses, public-houses, churches, etc.*

4. Any accumulation of *filth* or *refuse* of any kind should be at once removed from or about the premises, and *disinfectants freely used.* If this cannot be done by the persons themselves, immediate notice should be given to the *Inspector of Nuisances.*

5. The existence of nuisances of any kind and wheresoever situated should be at once reported to the *Inspector of Nuisances.*

VI. During the prevalence of *epidemic, infectious* or *contagious diseases*, it becomes specially important that the general laws regarding the preservation of health should be rigidly attended to.

2. Implicit trust should not be placed in so-called "*disinfectants.*" They are very useful when judiciously employed, but are by no means *certain* "preventives of disease."

3. *Pure air, pure water, warm clothing* and *good food* should always be obtained if possible. By their constant use less chance is afforded for an invasion of disease.

4. *Temperance* both in eating and drinking is essential for the maintenance of health and the prevention of disease.

5. *Overcrowding* in houses, workshops or schools should be strictly prohibited.

6. All houses, cottages, schools and public rooms should be kept clean and well ventilated; and frequent use of lime-washing on the walls and ceilings should be made.

Special Directions.—I. Scarlatina and Scarlet Fever are one and the same disease. It is very infectious. A very *mild* case may give rise by infection to a very *severe* one. Infection is contained in all discharges from the body during the progress of the disease and recovery; but more especially from the skin during convalescence, and when the cuticle is being shed. The dry particles which are separated from the skin are highly infectious, and retain their infectious nature for an unknown time, unless thoroughly disinfected. They are disseminated through the air, and become attached to articles of furniture, clothing, draperies, and wall papers, etc. Thus the disease may readily be conveyed from one person to another by those who are not themselves suffering from it. It is also conveyed, as has been mentioned, by bedding, clothing, furniture and other articles, and by rooms which, having been exposed to infection, have not had their floors, ceilings, or walls disinfected, or had the wall papers removed.

No child should be permitted to go to school from an infected house, and communication of such in play or otherwise with healthy children should be prevented.

When a person has had the disease, he should not be permitted to mix with others until he has perfectly recovered and has had his clothes thoroughly disinfected; and not even then without the permission of his medical attendant. Nor is it advisable that any one who has had the slightest communication with a person suffering from the disease should go to any church, meeting, public-house, fair, or market, etc. Neglect of these precautions is a prolific cause of the spread of this disease.

Attendants on persons suffering from *Scarlatina* should be chosen, if possible, from those who have already had the disease.

"It is believed that the dispersion of contagious dust from the patient's skin is impeded by keeping his entire body (including limbs, head and face,) constantly anointed with oil or other grease; and some practitioners also believe this treatment to be of advantage to the patient himself. When the patient's convalescence is complete, the final disinfection of his surface should be effected by warm baths,

with abundant soap, taken on three or four successive days (under the direction of the medical attendant), till no trace of roughness of the skin remains. After this process, and with clean clothes, he may be deemed again safe for association; but previously to this, however slight may have been his attack, he ought always to be regarded as dangerous to persons susceptible of Scarlatina."—MR. SIMON, *Medical Officer to Privy Council.*

II. Small-Pox.—Infection from this disease is contained in all matters passing from the patient—in the breath and from the skin, in the *matter* contained in the "pocks" and in the dried scabs of the latter.

Vaccination, carefully and efficiently performed, is the only means of preventing or modifying this disease, and by it an almost certain immunity from *death* by this disease is conferred. No doubt cases do occur after vaccination, but they are milder in character than those occurring in the unvaccinated. After several years' interval, *re-vaccination* ought to be had recourse to; and whenever the disease is present as an "epidemic," every person should be vaccinated, whether he has been so previously or not; and at such times all *unvaccinated children*, whatever may be their age, if in a fit state, should be vaccinated without any delay.

There is nothing which has been more certainly proved than the fact that vaccination saves annually thousands of lives, and therefore no attention ought to be given to those ignorant and foolish persons who are constantly circulating absurd ideas regarding it.

Persons attending on patients suffering from small-pox, should themselves have had the disease, or should recently have been re-vaccinated.

III. Enteric (*Typhoid or Gastric*) Fever.—The mode in which infection is chiefly spread in this disease is by the poison contained in discharges from the patient's bowels, and lasts certainly as long as these discharges continue to be unnatural. It is believed, however, by some, that this disease is infectious in other ways. These discharges infect the surrounding air, the bed and body linen, and also all places used for their reception. Thus, if placed in a water-closet, cesspool, drain, privy, or ashpit, the sewers of a town or village, and through them the drains of houses, may, under certain circumstances, be the means of disseminating the disease. When drains into which these discharges have been thrown pass near to wells, the water contained in the latter has frequently been found to be perfectly unfit, indeed dangerous to use. By faulty construction of such drains, soakage is frequently caused either into wells or into the surrounding ground, rendering them directly the means of spreading the disease. Cisterns may become contaminated by having their overflow pipes terminating in drains; and even water supplied by a water company may become infected by gas being drawn into defective pipes during an intermittent supply.

Milk has frequently been found to be a fruitful medium for conveying the disease, either from having been placed in infected air, from which it has absorbed the poison, or from *milk-pails* having been washed, or the milk adulterated, with water containing the infection.

Great care should therefore be taken as to the source of the household milk supply.

The most certain and most deadly manner in which the poison of *enteric fever* is conveyed is by contaminated drinking water. The most certain way of preventing this contamination of water is by immediately destroying the poison contained in the discharges as soon as they are passed by the patient.

Disinfectants should be placed in the chamber utensil before use; and immediately after being used more disinfectant should be added. Above all things, the use of disinfectants should be frequent and copious.

The patient ought also to expectorate into a vessel containing some disinfectant.

All sheets, towels, handkerchiefs, &c., which have been used by the patient should be thoroughly disinfected, and afterwards carefully washed.

In all cases of infectious disease, it may be as well that the patient use rags or pieces of old linen, &c. (in lieu of pocket-handkerchiefs), which may afterwards be burned.

When the bed or body linen is soiled, the soiled spots should be sprinkled with some disinfecting powder.

A small sheet of gutta-percha, mackintosh cloth, or other waterproof sheeting, placed below the upper blanket under the patient's body, effectually protects the bed from discharges, and is especially useful in this disease.

After the performance of any duty about a patient, the attendants should wash their hands freely in disinfected water.

The discharges should *never* (if it can possibly be avoided) be placed in a privy or water-closet, but should, after complete disinfection, be buried deeply in the ground, at a distance from any drain, well, or watercourse. On no account should they be thrown on to any ashpit or dunghill, nor into any cesspool.

IV. Other Infectious Diseases.—It is quite unnecessary to prescribe special rules for the prevention of the spread of *Typhus Fever, Measles, Diphtheria, Hooping Cough*, &c. The general directions given are sufficient guides as to what is necessary in cases of those diseases. Many recommendations might be made regarding them, but these belong more to the duties of the medical attendant than to the Medical Officer of Health, and therefore are omitted here.

Directions for Disinfecting Rooms.—Rooms which have been occupied by a person suffering from *infectious disease* should, on the termination of illness, be at once disinfected. To effect this thoroughly, all crevices round windows and doors and the fireplace should be closed by pasting pieces of paper over them. Lumps of sulphur (brimstone), one pound for every thousand cubic feet of space, should then be put into a metal dish, placed by means of tongs over a bucket of water. This being set fire to, the doors should be closed, and the room should be allowed to remain without interference for three or four hours. After this time the windows should be thrown open, and when the fumes have disappeared, all the woodwork and walls should be thoroughly washed with soft soap and water, to which *carbolic acid* has been added (one pint of the common liquid to three or four gallons of water), and the paper from the walls stripped off. In whitewashed rooms the walls should be scraped, and then washed with hot lime,

to which *carbolic acid* has been added. The windows should then be kept open for thirty-six or forty-eight hours.

Directions for Disinfecting Clothing.—The best mode of effecting this is by the agency of *great heat*, and when this is possible no other plan need be tried. Unless, however, there are places built on purpose, this agency is hardly procurable. Failing this, *boiling* clothes in water to which some disinfectant has been added should be employed. *Carbolic acid*, one part of pure, or two parts of commercial acid to one hundred parts of water, is sufficient.

Woolen clothing cannot be treated in this manner, but must be exposed for some time to the fumes of *sulphur*, and afterwards freely exposed to the action of the sun and wind. Other methods of disinfecting linen and other washing materials may be used.

One gallon of water containing two ounces of *chloride of lime*, or one fluid ounce of the solution of that substance or of *Condy's Fluid*, or four ounces of common *carbolic acid* solution, may be used. In this the clothes should be steeped thoroughly, and afterwards placed in boiling water, or simply boiled. If *Condy's Fluid* be used, the clothes should be merely immersed, and not allowed to remain for any time, otherwise they will be stained, but they must be rinsed in clear water. If any other disinfectants can be readily had, it is better not to use *Condy's Fluid* for this purpose.

Directions for Disinfecting Discharges of Persons Suffering from Infectious Diseases.—There are several disinfectants which may be used for this purpose.

1. Two pounds of *sulphate of iron* (copperas or green vitriol) dissolved in one gallon of hot water, may be used either hot or cold.

Half a pint or so of this solution should be placed in all chamber vessels likely to be used by the patient when empty, and the same quantity should be poured over the contents after use.

2. Quarter of a pint of *Calvert's Liquid Carbolic Acid* in one gallon of water may be used in the same manner.

3. A like quantity of *Sir Wm. Burnett's Disinfecting Fluid*, or,

4. Of *Condy's Fluid*, may be similarly employed.

Directions for Disinfecting the Hands of Attendants.—After any duty connected with a patient suffering from *infectious disease*, the hands of attendants should always be put into one of the above solutions, prior to being washed in clear water.

Directions for Disinfecting Privies, Ashpits, Water-closets, Drains, or any Offensive Places.—Two or three pounds (according to circumstances) of *sulphate of iron* (copperas or green vitriol) dissolved in a gallon of water, may be thrown into the place requiring disinfection, in quantities of one quart or upwards, according to the necessities of the place, and repeated so long as offensive odors exist.

Carbolic Acid, Burnett's Solution, Condy's Solution, Calvert's or McDougall's Powders, and Cooper's Patent Salts (the latter are inexpensive and not dangerously poisonous disinfectants), may all be used, either separately or in conjunction, for this purpose. All these articles when sold have full information regarding the quantities necessary for different purposes given with them.

It must be remembered that most of these disinfectants are very poison-

ous, therefore great care in their employment must be taken. They should be kept entirely out of the reach of children, should not be put into bottles or receptacles generally used for other things, and should invariably have a "Poison" label attached.

With regard to the employment of *disinfectants*, it should be distinctly understood that they are merely *aids* in preventing the spread of infectious diseases, and that they must not by any means be trusted to entirely for that purpose.

In the event of *sewer gas*, continued *offensive odors*, or *constant sickness* occurring in a house, proper workmen should be obtained in order to see if any structural defects exist in sinks, drains, water-closets, privies, &c. If such should exist, disinfection merely will be of no avail.

General Directions for the Preservation of Health.

I. HABITATIONS.—All dwellings should be free from dampness, be freely ventilated, and have abundance of daylight.

1. "*Overcrowding* in houses is very injurious to health. Any house or part of house, so overcrowded as to be dangerous or injurious to the health of the inmates, whether or not members of the same family, shall be deemed a nuisance, liable to be dealt with summarily in manner provided by the Act."—38 and 39 Vic., chap. 55, sec 91.

2. *Cleanliness* is essential to the preservation of health. The ceilings of houses should be frequently whitewashed and the rooms freely swept and floors washed.

3. *Fresh air* should be admitted into all bedrooms in the morning, by opening windows and doors. Bed coverings should be thrown down and exposed to the air for some time before the bed is made.

4. Chamber vessels should not be allowed to retain their contents and remain in any room longer than is absolutely necessary.

II. CLOTHING.—The body should be well covered. In winter or cold weather, flannel should be worn next the skin. In summer, if flannel be found too oppressive, some lighter fabric may be used, but this should invariably be *woolen*. Linen should be frequently changed.

III. FOOD.—Food should be plain, wholesome, and fresh. Meals should be taken, if possible, at regular periods. Infants should have no other food than breast milk until the first appearance of teeth, when small quantities of light farinaceous food may be given in addition. If there is a deficiency of breast milk, cow's milk diluted according to circumstances with tepid water and a little sugar may be given. No child ought to be older than nine months before being weaned.

IV. PURE DRINKING WATER should always be used. No water which can be suspected of containing any contamination from sewers, privies, or drains should ever be used. Pure water should be clear, colorless and free from smell, but all such water is not necessarily pure, but may contain sewage, although it is bright and sparkling. All water should be filtered; but filtration will not separate sewage, but will only separate solid matters. A cheap filter may be easily made thus: Plug the hole of a flower-pot loosely with a piece of sponge, place a layer of powdered animal charcoal about one inch thick, then a like quantity of clean sand, and on that some coarse gravel. These should be frequently changed. The charcoal may be burned over again. It

is a wise precaution, when any doubt exists as to its purity, to *boil* water before use.

V. EXERCISE.—A moderate amount of exercise should be taken daily.

VI. MEDICINE should never be taken except by the advice of a physician, unless under very ordinary circumstances. Persons who are perpetually physicing themselves are never in a healthy condition, either bodily or mental.

It would be quite impossible, and beyond the scope of these "plain directions," to give fuller directions for the "preservation of health." When in any difficulty, it is wise at once to consult a medical man.

———o———

Insanity in the United States.—The intelligent care of the insane, with a view to the restoration to health and society, is so recent that it may be dated, in the United States, in the present century. The time is even within the recollection of many now living, when faith in the curability of the disease became general, even among medical men. Upon the dawning of the belief that insanity was susceptible of cure, hospitals began to be built, for the two-fold purposes of custody and treatment; for, besides the difficulty of taking care of lunatics at home, it was found that comparatively few recovered. From this period hospitals began to be regarded as not only the best, but to most persons the only places for the insane. Hence an increasing demand for their accommodation; and though their numbers have multiplied largely, and have greatly increased in size, they are still inadequate to entertain all who knock at their doors and with piteous appeals seek admission. It is invariably found that when a hospital is opened for the accommodation of a given district, the applications for admission far exceed its capacity, largely outnumbering the statistics collected by the census-taker. The country seems suddenly thronged with insane people, and we are apt to be impressed with the belief that this dread disease is largely on the increase. But the probable fact is that no such increase really exists. It is not unnatural that, mainly out of family pride, the questions of the census-takers are often evaded, and the relatives of the unfortunate patient, seeing no benefit to come from revealing this "skeleton in the closet," keep it from observation. But, promptly, when an asylum is opened within their reach, free to all without pay, the curtain is drawn and they come forward with their afflicted.

That insanity does not increase, *pro rata*, at least in the United States, is proven by the census returns for the past twenty years. In 1850 this country had a population of 23,191,876, and a total number of insane and idiots of 31,397, or 1 in 378. In 1860, with a population of 31,443,322, there were 42,864 insane and idiots, or 1 in 733. And in 1870, with a population of 38,555,983, there were 61,909 of that class, or 1 in 623. In England, during the same period, there was an average of about 1 in 450; in Scotland, 1 in 460; in Ireland, 1 in 400; in France, 1 in 600; and in Australia, 1 in 524. These reports, if accurate, show a favorable condition in this country, as compared with that of others.—C. D. ROBINSON, in *Scribner*.

PERSONAL IDENTITY.

Proceedings of New York Medico-Legal Society, Dec. 6, 1876, Prof. F. H. Hamilton, M.D., L.L.D., President, in the Chair.

By James Appleton Morgan, Esq.

Mr. Best, in his essay upon the Common Law of Evidence, remarks that the division of Circumstantial Evidence may well be termed "the Romance of the Law," and doubtless it is—hidden away among technical terms and legal platitudes, in lawyer's tomes in sheep and vellum, rather even than in Fielding, Dickens or Dumas—that the searcher for the marvelous will reap his richest harvest. If the range of our inquiry should take us within this romantic tract, it must not be supposed that no practical question will arise, in the solution of which the two professions of Law and Physics may well be concerned.

The law constantly deals with every element of human procedure; every phase of human life, from the grandest to the most minute, from an arbitration between two empires to the pressure of a foot-step disturbing the dew upon a grassy sward, comes constantly within its ken and scrutiny. This human procedure might, not unfairly, for our purpose, be classified into two grand divisions, namely: into matters of Life and matters of Society. In dealing with questions of Society the lawyer must study of the rights and duties of men in neighborhoods, of municipal and commercial and international law, and their myriad subdivisions. It is in dealing with questions of Life, that the lawyer will find the line of his path—like the familiar proposition in geometry—meeting the path of the physician, the two, thence and thereafter, to form one and the same straight line of logic and of inquiry. This path we may well conceive the science of Medical Jurisprudence to be.

There is in this path one similarity between the physician and the lawyer. They must both here set similarly to work. And, just as a surgeon must have a cadaver to dissect or a living body from which to cut an offending member, so the lawyer, in pursuing a crime against life, must first produce a body upon which that crime has been committed. This principle, known as the principle of the Corpus Delicti, was fundamental in the Latin law. "Diligenter cavendum est judice ne supplicium præcipitet antequam de crimine constituerit. De Corpore interfecti necesse est ut constat." Or, as Lord Hale said, "I would never convict any person of murder or manslaughter, unless the fact were proved to be done, or, at least, the body found dead," a rule which, so far as I am aware, has been invariably accepted since. In a very recent case indeed—that of the People of the State of New York against Edward H. Ruloff—it was overruled, and the prisoner found guilty of the murder of his infant daughter, although the child's body was not produced and no trace of it could be alleged to have been found. (3 Park. Cr. Rep. 401). But the conviction that a dangerous precedent had been pronounced was all but universal. Hard cases make bad law. Cases constantly arise where hardship appears to be worked by a strict adherence to legal rules. But, once

relaxed, those rules re-assert themselves so emphatically, that we can only marvel at and admire the wisdom of the Fathers, who could, amid the circumstantiality and verbiage of individual cases, lay down rules and principles, with reasoning so clear and forcible that from their conclusions to-day there is no escape. It was not without cause that they devised restraints and technicalities, the reason of which, though seemingly lost in the mist of ages, it only needs an effort to abolish, to make apparent beyond all cavil. And so this case was speedily overruled (18 N. Y. 179) and the dictum of Lord Hale again asserted to be the law of the State of New York, as it is of every other common law country on the globe. The term so taken from the civil law is often explained to mean "the substantial general fact of a crime having been committed," the body or the substance of the crime as distinguished from the particular form given to it by its connection with the accused, and of this substantial general fact the law will insist upon the strongest, that is to say upon absolute, evidence.

Even the confession of an accused, uncorroborated or made out of court without a showing of any Corpus Delicti, will not dispense with a body and justify a conviction, and I may here notice that it is well that it may not be allowed to do so. For although confessions might seem at first glance the best possible evidence which juries could desire, they, not unfrequently, are the very flimsiest and most unsatisfactory possible. I wish I had time to stop here to enlarge upon the demonstrated fallibility of confessions. I may say in passing, however, that there are at least sixteen well authenticated cases in the books, of individuals confessing the most heinous crimes of murder, when they have been utterly innocent of anything of the sort, except the hallucination or the motive which induced the statement. It is probably fresh in the minds of most that only last summer a German servant girl, on Third Avenue, of this city,* assured her mistress, whose little boy, a child of seven, had just died and been buried, that she (the servant) had poisoned the boy. The servant swore to her own crime and was taken into custody, and it was only when, upon exhuming the child's body and examining its stomach, that no poison was discovered, that against her own protest she was acquitted of the possibility of the crime. And later on I purpose more than a passing allusion, though in other connection, to the world-renowned Boorn case, in which—despite of a self-constituted murderer's confession—alleged victim walked into court and confronted the man who had sworn to killing him.

This Corpus Delicti, this visible material substance once proved, a second and further step becomes necessary. This second step, in its chief phase, at least, is a medico-legal step, which it is all but absolutely impossible to take without assistance from the learned profession of medicine and surgery. This second step is the connecting of the material Corpus before us, with some personality, with some human identity known once to have lived and moved upon the earth. As I am narrowing my remarks now solely to the domain of criminal law, I will go further, and assert that here the physician is not only indispensable, but absolutely omnipotent. The whole possibility of a

* New York.

criminal trial here hangs upon his word alone. It is he alone who can tell us whether this body was deprived of its life by natural causes, by accident or suicide; or whether a homicide has been committed. If the one, there can be no trial, as there has been no crime. If the other, the law must begin its search for a culprit, for an indictment, and proceed to construct the complex machinery of an arraignment.

This all-important medico-legal process of connecting a dead body or corpus delicti with a human being once known to have lived, with your permission I shall attempt to consider to-night, under the head of "PERSONAL IDENTITY," and under it make for convenience two subquestions, namely:

I. How may a lifeless body and a living one be recognized as having been, at one time, the same? And

II. How large or how small a parcel of human remains can be so safely identified by medico-legal experts, in cases involving life and death, as to entitle them to be considered as constituting a Corpus Delicti?

Of course I do not expect to develop in this examination of cases anything more than one or two general rules. Each case must, of course, depend upon its own circumstances. The body of A. will be identified in one way, and that of B. in another. But, if I can do no more, a digest of the cases might not prove without value for reference to members of this Society; and, upon grouping these cases together, it is hard to conceive that some principle, in common to them all, should not appear.

At first this question of one's Personal Identity might seem to be the simplest that could possibly come before a court. But the fact is precisely the reverse. Even in life the question whether a living man, speaking and moving, capable of being watched and questioned, is one identity or another, has proved itself, over and over again, by far, instead, the most perplexing. Cases of mistaken personal identity have been all but innumerable, since the days of Antipholus of Syracuse and his twin brother, Antipholus of Ephesus, and the two Dromios, their servants. "Cases of Resemblance," we remember, is the title of one chapter of Pliny's Natural History, wherein the author cites the instances of the great Pompey, of whom personally the plebeian Vibias was the double and counterpart; the Consuls Lentulus and Metellus; and the impostor Artemon, the double of Antiochus, King of Syria. And without referring to the very recent Tichbourne Trial, in which no less than eighty-five witnesses—under the most rigorous and vigorous cross-examination that possibly the world has ever seen—maintained positively that a certain Englishman was Sir Roger Charles Doughty Tichbourne, a Baronet, while a corresponding number were equally unshaken in their conviction that he was one Arthur Orton, a Wapping butcher, the books are full of puzzles of this nature.

Jack Cade, the pretended Mortimer; Lambert Simnel, the false Earl of Warwick; Perkin Warbeck, the sham Duke of York; the various personators of Don Sebastian, the lost King of Portugal; Jemeljan Pugatscheff, the sham Peter III; Padre Ottomano, the supposed heir of the Sultan Ibrahim; Mohammed Bey, the Counterfeit Viscount de Cigala;

the case, in 1748, of the false Prince of Modena; the monk Otrefief, claiming to be Prince Dimitri; Joseph, the pretended Count Solar; John, claiming to be Earl of Crawfurd; John, claiming to be Sir William Courtenay; James Annesley, calling himself Earl of Anglesea; Hans, claiming to be Earl of Huntingdon; Bebok, the counterfeit Voldemar, Elector of Brandenburg; Arnold Du Tilh (or Dutille), the pretended Martin Guerre, who successfully deceived the living wife so far as to live with her three years, surrounded by four sisters and two brothers-in-law, and beget two children, before his discovery, and whose case came before the Parliament of Toulouse in 1560, wherein forty witnesses on each side swore to his personality; Pierre Mege, the fictitious De Caille; Michael Feydy, the sham Claude De Verre; the claimants to the Banbury and Douglass Peerages; James Percy, calling himself Earl of Northumberland; Alexander Humphreys, the pretended Earl of Stirling; William George Howard, the false Earl of Wicklow; the numerous so-called heirs of the Stuarts; John Hatfield, claiming to be the Hon. Alexander Hope; Thomas Provis, calling himself Sir Richard Smythe; Lavinia Jannetta Horton Byves, who is now, or was within a few months, living in England, calling herself Princess of Cumberland; Amelia Radcliffe, pretending to be Countess of Derwentwater; in France, the child *Francis Noisen*, who not only was the exact counterpart of the child *Labrie*, but who had a scar on the right arm and a cicatrix on the inner side of the left knee, as had he (Beck. Med. Jurisprudence, i. 674; which reminds me that in Covington, Kentucky, a case is said to have occurred where two men met, each the double of the other in form, stature and feature, each having lost a right leg, amputated at the knee, and each being blind in the left eye from accident;) Hervagault, Maturin Bruneau, Naündorff, Augustus Meves, and Hébert, (calling himself Richemont, Duke of Normandy,) who all claimed to be the lost Dauphin of France, as did, in our own country, the Rev. Eleazar Williams, the Apostle to the Indians, whose marvelous story, less than twenty years ago, made familiar in every circle the question, "Have we a Bourbon among us?" It is less than a year ago, I believe, that three men, Carr, Finnegan and Farley, after having served nearly two years in the State Prison at Trenton, were discharged as having been the doubles of three other men who once robbed a jewelry store in Newark, New Jersey, and for which burglary these three had been convicted; recalling the exactly identical cases of the peasant *Baronet*, and of Frank Douglass. The latter, in England, many years ago, was committed for highway robbery on the positive oath of the parties he was supposed to have plundered, his personal resemblance to the real highwayman being so exact as to deceive everybody. Douglass, however, I believe, ultimately escaped conviction (Paris Med. Jurisprudence, i. 222: iii. 143); in which he was more fortunate than *Baronet* (born in France in 1717, see *Causes Celebres par Mejan*, tom. iv., p. 329), who was sentenced to the galleys and there kept many years, simply because he had the misfortune to exactly resemble somebody else. All these are proofs of the fallibility of human testimony in cases of personal identity; and if all these, in life, puzzled and perplexed the most conscientious investigators, what shall we say of the scrutiny whether a piece of bleeding or mortifying flesh, or a parcel of bones, is or is not fragment of a missing human identity?

Now we are told by the books that recognition, in the case of a dead body must be effected, first, from the features; failing these—and they are often so bruised as to be unrecognizable, as in Colt's case, New York, 1842 (the New York Tombs, Sutton, N. Y., 1874, p. 64), when the murderer deliberately mutilated them to prevent identification, or in McCann's case (13 Sm. and Mar., 472), where the face had been exposed and eaten by swine—investigation is to proceed by reference to marks upon the body, to clothing, or to objects or things found near the remains; and thirdly, when all these are wanting, by careful medical or anatomical examination of the remains themselves, whether bones or portions of flesh, to elicit facts as to the weight, age, sex, stature and date of death of the deceased; upon which facts must then depend the whole case of the accused. Let the law do its best, it is here, in this third case, bound hand and foot. It cannot advance a step without medico-legal experience; without that it is powerless to do justice, and the faintest attempt is certain to do irreparable injustice instead.

Recognition by feature, or by clothing or other objects, can be made by any competent witness. It is very clear, however, that, failing recognizable features or material substances, the services of other than lay witnesses must be sought. But courts need not look far. Fortunately for the lawyer, at his hand, and within easy call, is a learned and honorable profession, older than his own, and a class of witnesses who, in every case of this character, have proved themselves competent and most conclusive.

It is of incalculable importance that the witness so introduced, at the inception of the inquiry, should be free, above all things, from suspicion. He is in a position where his lightest word may involve the liberty, and ultimately the life, of a fellow being; and it is to the peculiar glory of the medical profession, that last of all does a physician allow any prejudice or suspicion or hasty suggestion of a crime to anticipate his scrutiny. The rule of Dr. Beck, that every possible circumstance which might have caused death is to be recollected before a case is referred to a criminal court by a physician, is one suggested rather than necessitated by the universal bearing of physicians in court.

The commission of a crime is an inference from a corpus delicti, and since the law never permits an inference from an inference, it is fortunate that a body of witnesses who, from education, habits and experience, are unlikely to take anything for granted, is so near at hand. Who is not familiar with hundreds of cases in which lives have been saved by the testimony of physicians, where a hasty word from one of them might have had just the opposite result? For myself, I can point to no more eminent proof of the fact that physicians may be safely relied on to observe this rule of Dr. Beck, and will banish from their minds any thought of crime until it is forced there by overwhelming demonstration, than the celebrated Wharton case so lately tried in Baltimore. The People proved a motive for a homicide and a purchasing of poison; they traced that poison to the very hands of the prisoner, and proved a corpus delicti in whose stomach the poison was found, and, moreover, a body to which in life the prisoner had been seen to administer matter which it received volun-

tarily into its stomach; and yet, in the face of all this and much more, eminent physicians found that there was so strong a probability that the deceased had died of cerebro spinal meningitis, that the jury so unanimously found. Not alone in their art and practice may the profession of medicine claim to be the life-saving profession of the world!

It is the physician who, from the posture of a corpse, the position of a wound, the condition of a bruise, the color of the skin, or from a thousand other details which will more readily occur to a doctor than a lawyer, must indicate the whole course of a legal investigation, or stifle it at the start. The physician is not only an expert; he may be also a valuable detective. In the case of Beaugouin, who was murdered, cut in two and thrown into the Loire, less than a hundred years ago, the upper half of his body was discovered and interred, and upon being taken up fifteen days after and examined, the physician, De Ouvrad, asserted from his examination that the body had been hewn in two by a butcher. So the fact turned out to be, and the identical butcher who murdered the man was guilotined. But to the consideration of our headings:

And first, as to recognition, by features, of the Corpus Delicti.

All testimony as to personal identity, while it should undoubtedly be received, should be examined with the greatest care, and should not be allowed—if resting simply on a resemblance of features—to alone justify a verdict of the jury. This rule operates, says Dr. Wharton, not to exclude such testimony, but only to diminish its credibility. The doctor cites a case in Iowa, where a man had been murdered and the head severed from the body, and by a physician preserved in alcohol. Many witnesses were called to identify it. The prisoner proposed to prove, by two witnesses who were physicians and surgeons—and whose knowledge and attainments in their profession made them familiar with the natural changes through which a human body must necessarily pass after death—that, on account of such natural and inevitable changes, it was not possible for any one to identify the head. The court properly refused to permit the evidence of the physicians to go to the jury. It would have been competent, it was declared, for the witnesses to have stated the nature and character of the changes in the human body produced by death within certain periods of time; to have explained to what extent these changes had operated upon the head of the deceased, and their usual and necessary effect, according to the laws of nature. The progress of decay, the distortion and discoloration of the features, and the consequent change or destruction of the peculiar expression of the countenance by which human faces are usually distinguished and identified, as shown by the head in question, would have been proper facts for the witnesses to have pointed out and explained to the jury. It would have been for the jury then, from this medico-legal evidence, to have judged of the value of the testimony as to the recognition.

Secondly, as to the recognition by clothes or articles found near the corpus delicti.

This is not always safe. Sometimes, indeed, a skeleton may be identified by marks, or objects found near it. In the case of Rex vs. Clewes, twenty-one years after the death of a certain person, his skeleton was allowed to be identified by his widow from a peculiarity

about the mouth, and by a carpenter's rule and a pair of shoes found in the vicinity. But even in cases of the finding of an entire body a few hours after death this evidence is not safe. In 1868 the body of a man was found in the cupboard of a house in Hackney, England. One Dr. Ellis, the Medical Superintendent of an adjoining hospital, recognized the body as that of a lunatic under his charge, named Heasman. He recognized the clothes, the name Heasman was written on the stockings worn by the deceased, and the brother of the deceased was also confident of the identity; and yet, almost immediately after, a stranger, totally unconnected with the hospital, identified the cadaver as a totally different person by means of a photograph; and a woman, Mrs. Mary Anne Banks, positively swore that the body was that of her husband, one Ebenezer Charles Banks, a commercial traveler. She and her two sisters positively, upon oath in the Coroner's Court, so identified the body, and stated that a particular wound would be found upon the little finger; such wound was found, and this case, which produced much comment in America as well as England, went far to convincing the two professions of what will be the rule of courts in these cases to-day, and which we have just stated in the language of Dr. Wharton.

Thirdly: As to the proceeding by means of actual surgical and anatomical examination. And in conjunction with an examination of this third rule, it is peculiarly necessary that we ask our second question, namely: Supposing that the corpus delicti consist not of entire human bodies or even skeletons, but of fragments and portions, may the professional examination still proceed? How much of a human body will be recognized as a body in law, as a corpus delicti at all? Is the fragment of a human trunk—a limb, a hand, a collection of bones, a quantity of viscera, a pile of ashes, or a drop of blood—such a corpus delicti as the law will consider sufficient evidence that a crime has been committed to justify it in searching for a corresponding criminal? I believe that an answer to this question can only be attempted by reference to the cases under this head, with which the books are loaded.

In the Uzzerdook case, very recently tried at Westchester, Pennsylvania, in 1873, the remnants of two human bodies were found in different places. One of these was claimed to be, by the defense, the body of a man named Goss, said to have been burned to death, while the other was finally *proved* to be the remains of this same man, who, instead of beng burned to death, had been murdered by the prisoner. The case originated in a conspiracy against an insurance company. The trial was distinguished by the elaborate and costly circumstantiality which distinguishes all trials in which wealthy corporations are parties. Between these two corpori delicti—one found in the ruins of a burned building in a populous city, and the other discovered putrefying in a desolate wood many miles away—a chain of evidence was found so continuous and convincing as to warraut the conviction, followed by the execution, of the prisoner Uzzerdook. The facts are as follows:

The man Goss, proved to have had a large insurance upon his life, disappeared from the city of Baltimore on the night of the 2d of February, 1872. Upon that very evening a frame shop, in which he

was said to have been engaged in gilding picture frames and experimenting with a substitute for India rubber, was almost entirely consumed by fire. In its ruins, near the chimney in the centre of the building, charred and blackened human remains were discovered. Mrs. Goss claimed them to be the remains of her husband. From the body the hands and feet were off, the skin was burned crisp, and blackened. Identification by means of the features and expression was impossible. Mrs. Goss testified, however, that the corpse was brought home on the evening of the day following the fire, and that she identified it as that of her husband; testifying, however, that she judged only by the size and shape of the head, the neck and the body. In a suit which she brought against the insurance companies for the sums insured on his life, her father and mother also were witnesses, both testifying that they observed the same resemblance to Goss in the neck, head and body. Another witness said the body, when taken from the fire, resembled that of a female; but a Dr. Howard, who swore to having made a careful examination of the body a year after the fire, testified that it was the body of a man of about five feet eight to ten inches in height, with full chest and shoulders thrown back. This was on the 2d day of February, 1872. On the 9th day of July, 1873, a man named Hurford happened to be passing what are known as Baer's Woods, near Westchester, Pennsylvania. He observed a crowd of buzzards and an offensive odor. This led to the discovery—at about sixty-five feet from the highway—of something mysteriously hidden by means of leaves and a thin covering of earth, with the felled limbs of trees piled above. Upon the covering being removed, a shirt colored with blood and the mangled and putrefying remains of a human being were displayed. Upon being examined by surgeons, various marks and traces of violence were found, and the front teeth—four above and four below—were discovered to have been driven back into the mouth, two still adhering to the gums, and two lying loose upon the tongue. It is not within our province to follow the chain of testimony, the scrupulous and minute investigation by which these two bodies were connected, and by which one Uzzerdook, who had been a witness for Mrs. Goss in the actions against the insurance company, was proved, to the satisfaction of the jury, to have been the murderer, the remains of whose victim were found in the woods. But it is important to us to notice that the latter only of the two corpses was held to be such a corpus delicti as would justify the inference of a crime.

So far the principle would appear to be that only when marks of violence can be discovered by physical examination can we safely accept human remains as a corpus delicti. The burned body might have been burned by accident. The body found in the woods, mangled, hacked and hewn, wrapped in bloody garments, concealed by a heap of leaves and limbs of trees, could not have been deprived of life and so disposed, by accident. Had this second body, however, remained long enough without discovery, it is easy enough to imagine that the traces of crime might not have been readily apparent. In that case these would have been discoverable only by medico-legal scrutiny. But I incline to think, from the authorities, that some evidence must appear, from the body itself, of its having been de-

prived of life by the willful act of another, before it can be considered a corpus delicti. Otherwise it is not a "substantial general fact of a crime having been committed" (to use the words of our definition). It is a "substantial general fact" of a death, indeed, but not of a death by crime. I am aware that Bentham—whose writings on Evidence were the New Testament and Gospel of that science—asked if a criminal, by causing a successful disappearance of his victim's body, by means of its decomposition in lime or other chemical menstrua, or by submerging it in an unfathomable spot in the sea—the homicide being proved *aliunde*—could escape punishment? I apprehend that the answer must be—Possibly not. But the rule will be disturbed with great reluctance, and only in the strongest possible case, namely, where the killing is proved by eye-witnesses; or, if, in the case we have been considering, a person were actually seen to enter a building, and all means of egress therefrom watched, and before that same person left the building a man should be seen to ignite it, and the building thereupon should burn down, and the charred body of the person who had been known to be within—or a charred body of a human being—be found in the ruins, such a proof *aliunde* of the substantial general fact of a homicide might dispense with the proof from the body itself. But we must, nevertheless, insist that the rule the law has laid down for us is the safest for the community at large. By its strict application a guilty man, indeed, may escape. Still, we must remember that the law was not written for the benefit of one man, but for all. Not to meet the individual case of the particular prisoner, (whom, we may happen to know, is guilty;) but to meet the greatest possible number of cases, and, on the whole, to be on the safe side in dealing with that whole number. To say nothing of the mind of a Bentham, it would not be difficult for any ingenuity to conceive of a variety of cases wherein strict adherence to legal rules will work hardship. But still, for all their ingenuity, I respectfully submit, the law is the law, and, in its integrity, in the long run, is the safest for us all.

And to prove that it is safest, let us look at the instance, in 1758, afforded by the case of Eugene Aram, whose romantic history has been so often borrowed by fiction. Eugene Aram was arraigned in that year for the murder of one Daniel Clark, in 1745, thirteen years before. The principal evidence seems to have consisted of a quantity of bones found in St. Robert's Cave, near Knaresborough. In his magnificent defense—which, though pronounced by a layman on trial for his life, and deprived of the privilege (as was the custom of those days) of counsel, has scarcely been surpassed by the most eminent of accustomed pleaders—Aram suggested that these might have been the bones of hermits or anchorites as naturally as the bones of Daniel Clark, and referred to many instances of such discoveries, which would make the probability of there being such remains much stronger than the probability of a peaceable, well-reputed recluse and scholar like himself suddenly becoming a murderer; and dwelt upon the horror of the mistake of which the law would be guilty did it take a human life upon such variable evidence. As it happened, Aram's case finally turned upon the testimony of an accomplice, who became state's evidence, and this danger

was not experienced nor alluded to by the court. But many years later, in the United States, the point raised by Aram was elaborated by so marvelous an instance, that I may be pardoned for recapitulating it here.

In 1812 there lived in Manchester, Vermont, a man named Barney Boorn, who had two sons, Stephen and Jesse, and a son-in-law named Russel Colvin, all living with him. Colvin was an eccentric man, supposed to be insane at times, and frequently absented himself for days without notice, and without giving any account of his adventures. At last he was missing so long that suspicions of foul play were aroused. Months and years passed, and yet there was no explanation of Colvin's absence. Some of the neighbors remembered that the Boorn brothers, very shortly after his disappearance, had declared that Colvin was dead, and that they had "put him where potatoes would not freeze." They had not been on good terms with him, and this added to the prejudice against them.

Singularly enough, other circumstances began to accumulate against the brothers. Some children found a dilapidated hat, which was recognized as the one Colvin wore at the time of his disappearance. Soon afterwards a dog uncovered some bones beneath an old stump, which at first were pronounced to be human bones, but subsequently were found not to be. An uncle of the boys had a dream, in which Colvin came to his bedside and told him he had been murdered. A barn in the neighborhood was mysteriously burned, and it was at once conjectured that the murdered man had been buried under it, and the fire intended to destroy all traces of the crime. All these circumstances added to the excitement against the Boorns. Stephen was then out of the State, but Jesse was arrested. He confessed that his brother Stephen had told him, a short time previously, that he and Colvin had quarreled, and that he had killed Colvin by a blow on the head. The people of the neighborhood, and for miles around, spent the next few days in another search for Colvin's bones, but none were found.

Stephen Boorn was brought home. He denied the statement of Jesse and asserted his innocence. The brothers were imprisoned to await the meeting of the Grand Jury. The principal witness before that body was a forger who had been confined in jail with the Boorns. He reported in detail a confession of the murder by Jesse Boorn, and both the boys were indicted. This was in September, 1819, more than seven years after the disappearance of Colvin. In November the trial took place. Meanwhile Stephen was induced by the remarks upon the hopelessness of their case to confess the crime, in the expectation of mercy from the court. This confession was the chief evidence against them. Notwithstanding that it was drawn out by a hope of obtaining a more favorable verdict, and that no body had been found as proof of the murder, or even that Colvin was dead, the brothers were convicted and sentenced to be hanged on the 28th of January, 1820. So decisive did the testimony against them appear to be, that the mother of the convicts was expelled from the Baptist Church, and the father held a prisoner for a time, upon the suspicion that they must have been accessory to the murder.

A few of the citizens who were disposed to be merciful signed a

petition for the commutation of the sentence against the Boorns. The Legislature voted to change the sentence of Jesse to imprisonment for life, but refused to interfere with that of Stephen. Meanwhile it occurred to Stephen, in an interview with his counsel, to advertise for Colvin in the newspapers. Up to that point his counsel had believed him guilty, but he assured them that his confession was untrue and that he was innocent. The following notice was therefore printed in the *Rutland Herald*:

"MURDER.—Printers of newspapers throughout the United States are desired to publish that Stephen Boorn, of Manchester, in Vermont, is sentenced to be executed for the murder of Russel Colvin, who has been absent about seven years. Any person who can give information of said Colvin may save the life of the innocent by making immediate communication. Colvin is about five feet five inches high, light complexion, light colored hair, blue eyes, about forty years of age.

"*Manchester, Vt., Nov. 26th*, 1819."

Newspapers traveled slowly then, and Stephen's friends had but little hope that this would save him, even if his story was true. Three days afterwards, (says the pamphlet of Mr. Sargeant, one of the counsel in the case,) the New York *Evening Post* copied it, and "the next day it happened that the notice was read aloud in one of the hotels in New York. Another man standing near, named Whelpley, said he had formerly lived in Manchester and was well acquainted with Colvin, and related many anecdotes and peculiarities concerning him. Mr. Tabor Chadwick, of Shrewsbury, N. J., was also standing near, and listened to the conversation, which made a deep impression upon his mind. On thinking the matter over after his return home, it occurred to him that a man then living with his brother-in-law, Mr. William Polhemus, of Dover, New Jersey, answered exactly the description of Colvin as given by Whelpley." Finally he wrote a letter to the *Evening Post*, giving his conclusions. Whelpley saw it, went to Dover, identified Colvin, and, after great effort, induced him to visit Manchester. There was great rejoicing in the town, and Stephen Boorn was brought from the prison to fire the cannon that celebrated his deliverance." So much for a criminal trial in which medico-legal evidence took no part.

We come next in the order of our inquiry to a trial fresh in the minds of many present, wherein, in spite of the delicate and dangerous nature of the research, a man was hung upon evidence depending entirely upon the recognition of a very few human bones by surgeons. I allude to the famous case of Dr. Webster, executed in Boston, August 30th, 1850, for the murder of Dr. Parkman, in that city, on the 24th of November, 1849. A careful reading of the evidence in that case, I think, will lead to the conviction that the mere fact of portions of a human body being found in a medical college, even in so unusual a place as a vault connecting with a professor's apartments, hardly raised a presumption against the prisoner. It was the finding, in a laboratory furnace, of a number of small bones from a human skull, fused with slag and cinders, by examination of which acute experts discovered appearances indicating that the skull had been

fractured before being subjected to the action of the fire; besides the identification by a dentist of certain teeth which he had filled with gold, as Dr. Parkman's, which really induced the conviction. I cannot refrain here from remarking, however, that it might not be well to place too much reliance on the Webster case, to-day. Had Dr. Webster been tried in 1876 instead of 1850, upon the same evidence, it is very probable that he would have been acquitted. For if the last twenty-five years have been fruitful in anything, they have been fruitful in proofs of the uncertain and unsafe nature of circumstantial evidence, and of the reluctance with which juries will convict in capital cases upon its strength alone; to say nothing of the advanced discoveries in the region of what I may call the probabilities of science, or of the daily increasing industry of counsel. But the case of Dr. Webster at least shows in strong contrast to the Boorn case, and no two could better illustrate our point. In the Boorn case a man was convicted—*without* medico-legal evidence, (as subsequent facts proved)—wrongfully; while, in the Webster case the man was convicted almost solely *upon* medico-legal evidence—(as subsequent facts proved)—rightfully; and this, although, in the one case the non-professional evidence in quality and quantity was overwhelming, while in the other the professional evidence almost stood alone.

The Webster case had its seeming prototype and parallel in one mentioned in the London *Medical Journal*, volumes v., 411, and xv., 518, where a corpse was disinterred at Lyons, in France, seven years after burial, and identified by the hair and teeth. (*Annual Register* for 1829, page 189.) In that case M. Orfila was asked if a body removed from the grave after such a lapse of time could possibly afford proofs of poison, and if so, in what manner such an examination was to be conducted. To which he replied that it was very probable the body was already reduced to ashes, but that nevertheless, if a sort of blackish coom was found at the sides of the spinal column, chiefly in the lumbar and dorsal regions, that mass might be analyzed in the manner pointed out in his work on Toxicology. And again, in the trial of Cook, at Leicester, in 1834, a parallel is furnished. In that case, Cook, after burning the body of the victim, was convicted by means of a portion of the flesh of the murdered man being found, sufficiently large to be identified as belonging to the body of a male adult. (*Annual Register* for 1832, page 271.)

But the very prototype and pattern of the Webster case was the case of Theodore Gardelle, tried for the murder of his mistress, at the old Bailey, in 1761, which, as proving at least that there is nothing new under the sun, we will briefly recapitulate from the account given in Vol. II, Newgate Calendar, page 295. Gardelle was a foreigner, a native of Geneva, who lodged at the house of a Mrs. King in Lincoln's Inn Fields, this Mrs. King subsequently becoming his mistress during his residence there. Gardelle one day, being something of an artist, painted her picture, and did not make it handsome enough to suit her. Upon this trivial pretext, at one time when they were alone in the house, they quarreled, and the quarrel growing to blows, Gardelle finally stabbed the woman with a sharp ivory-pointed comb in the throat until she died. He then put the body into her own bed, and covered it with the bed clothes, after which, according to his

own story, he fainted away at the thought of what he had done. The murdered woman's maid entering the room, however, he came to himself, and sent the maid off upon some pretext of an errand. He seems thereafter to have proceeded, with the utmost coolness, to discharge the maid, to strip the body, to carry it into the garret, and there at his leisure to hew it to pieces, and to dispose of it in parts. The entrails he emptied into the necessary, and the bones and solid parts he burned deliberately in the garret. At the end of a week, suspicion having been aroused, small fragments of half-burned bones were found in a fire-place in the garret, and in the cock-loft they found the private parts, one of the breasts and other portions of a female body. Gardelle was convicted, and hung in chains on Hounslow Heath in the year we have mentioned.

We seem to have come, therefore, to the fact that very small portions of a human body may constitute, under certain circumstances, a corpus delicti. I am not aware that a conviction has ever been obtained upon more minute particles or traces than those found in the Webster and Gardelle cases. In 1868 a case *did* come before a court wherein the only corpus delicti alleged consisted in a pool of blood mixed with viscera supposed to have been portions of a human brain.

The circumstances were something as follows: A vessel on the high seas numbered among its crew two men, named Parker and Lambert respectively. An animosity was known to have existed between them. One evening when Lambert was at the helm, the captain or some one in authority on deck, ordered Parker forward to look for land. He went, and this was the last ever seen of him, alive or dead. A large pool of blood, mingled with a whitish brown substance, which those finding it—albeit they were sailors and not surgeons—supposed to be human brains, was found upon the forecastle deck. This spot probably was cleaned away very shortly after, but sufficient evidence of there having been such a spot seems to have been admitted. The captain and crew seemed to have concluded from their own observations that the man Lambert had called somebody to relieve him at the wheel, had followed Parker forward, brained him with an axe from behind, and pitched the body overboard. At any rate, he was put in irons and brought into this port, where he was tried in the United States Court, before Judge Benedict, for murder on the high seas. But the Court, or at least the Jury, failed to find that the pool of "blood and brains" was such a corpus delicti as would justify them in convicting anybody.

It will be seen that this case differs from certain other cases of alleged murder on the high seas, in that, if murdered, traces of the body, or at least of the matter once entering into the composition of a human body, were found on the deck. In Hindmarsh's case (2 Leach Crown Law, 569) the accused was actually seen to throw the body of the missing man overboard, but his counsel contended that, as it was possible, however improbable, that another ship might have rescued the man, no conviction could be had for his murder as long as there were a possibility of his being alive; which (although the prisoner in that case was executed upon conviction upon other grounds) seems to be good law. And so in cases of infanticide. Courts hold very

strictly that the corpus delicti must be shown beyond any reasonable doubt.

But we need not multiply instances. A sufficiency of cases, I think, have been referred to, to justify us in apprehending that the difficulty of separating the testimony as to the corpus delicti from other evidence will prevent our laying down precise rules. We have seen, on the one hand, in the Uzzerdook case, that the personal identity of at least one of the remains was arrived at by evidence as to the movements, the actions, and the spoken and written words of living persons, and the circumstances under which they were done and said. We have seen, on the other, in the Lambert case, that the jury positively declined to find, in a pool of blood and animal matter, any corpus delicti at all, even when circumstances and acts and words strongly suggested that the blood and the animal matter was portion of a human being. Even when the matter was found on the forecastle deck of a ship at sea, out of sight of land or other vessel, and when a human being, one of the crew, was missing, who had a moment before stood upon that forecastle deck, and this, besides, even when, (as it actually appeared in this trial,) Lambert, in a state of intense excitement, had followed him forward, and returned alone with a hatchet in his hand. In the one case the corpus delicti without the evidence would not have satisfied the jury, and in the other the evidence without the corpus delicti *did* not.

Even in the Webster case—which, with the single exception of the Gardelle case, must so far stand unparalleled as the only case where fragments of a human body, unrecognizable by ordinary investigators, were actually identified after passing through an intense chemical heat, intended to utterly destroy them—all recognition would probably have failed had it not been for certain artificial matter, namely, the gold introduced into the murdered man's teeth by a dental surgeon. But, as we have said, had Dr. Webster been tried in 1876 instead of 1850, he would doubtless have gone back into the sunlight a free man. And his acquittal would only, indeed, have been another instance of that benign charity of the law, which would rather let ten guilty men slip through her fist than see an innocent man suffer, and which mercy to the individual is, after all, nothing more nor less than unrelenting justice to the State.

The case of Eugene Aram did not develop the danger of this sort of corpus delicti evidence. But the romantic and miraculous Boorn case, which we have cited in full, fifty-four years later, did demonstrate how unjust it might be to hang a man on the strength of finding certain bones, even when all the circumstances seemed to identify them, and even when the prisoner himself confessed to have murdered the very man to whom society had assigned the bones discovered!

Verily, in our rules of Law lies our only safety. We may carp at them when we see a guilty man escape the gallows he has earned. But, supposing you or I were unjustly accused? We would be very thankful for those same rules of law, then!

But in all these cases the reliance of the law upon the medical profession is most manifest; and guided by the facts and experiences of each individual case, the two rules we have so far eliminated will seem to be the rules for the guidance of the physician when called upon for his opinion in cases of personal identity, namely,

First, That he shall never be the first to *suspect a* CRIME; and

Secondly, That his opinion must be grounded on his physical knowledge of the matter examined, and not on the facts of the case, which are for the jury alone; that is to say, his examination must be purely anatomical and material. It is for the jury, and not for him, to SUSPECT, and to say whether, from his testimony, united with the other evidence as to the *res gestæ* in the case, it is likely that a crime has been committed.

I have before remarked that the law will not permit *an inference from an inference*, but, if at all, will draw the inference itself from a state of facts sufficiently proved; and in drawing this inference the court does nothing more than apply, under rule and sanction of law, a process of reasoning such as would occur, under the circumstances, to the mind of any intelligent or reasonable person—the force of which reasoning rests altogether on experience and observation, the course of nature, the constitution of the human mind, the motives of ordinary human action, the habits of society, the usages of men in neighborhoods and the like. Although, therefore, the physician's testimony is absolutely the indispensable guide of the court, it is, nevertheless, only the guide of the court's *inference*, and therefore must not, itself, be an inference. The evidence of the physician must therefore consist, first, OF THE FACTS THEMSELVES; and second—not of his inference from the facts—but OF HIS PROFESSIONAL AND SKILLED AND EXPERIENCED KNOWLEDGE OF THE CAUSE OF THOSE FACTS. And in forming his opinion, it is for the physician to remember that his is the one great exception to the rule which rigidly excludes opinions, an exception founded on the maxim of Littleton, "cuilibet in sua arta perito est credendum." Every man is considered skillful in his own profession. The opinion of witnesses possessing peculiar skill is admissible whenever the subject matter of inquiry is such that inexperienced persons are unlikely to prove capable of forming a correct judgment—whenever a knowledge of the subject matter involves more or less knowledge of any science attainable by course of study, preparation or experience.

Ordinarily this rule as to opinion evidence is qualified by another rule, namely, that scientific men called as witnesses may not give their opinions as to the general merits of the case, but only as to the facts already proved. In cases of Personal Identity it is easy to see that, at a proper stage of the examination, this qualifying rule is altogether removed, and the physician's opinion as to the identity is indispensable. Upon it may hang the life of an innocent man, and we have seen that he may place his life with confidence in the hands of the physician. "It would not be easy," says the Mr. Best before quoted, after a long examination of this class of evidence, "to overrate the value of the evidence, in difficult and delicate cases, given by medical men and physiologists, as witnesses in courts of justice."

"CALISTHENICS."

Brown, Chairman of P. S. No. 505, sat at breakfast with his old friend Dr. Toby. They had been chums at college; and the friendship there formed had been increased with their advancing years. Each thoroughly respected the other and thought him a downright good fellow.

"By the way, doctor, if you have an hour's leisure, come up to my school this morning, and see the children." "With pleasure," replied the doctor, "for I deem children the wisest of the race." "Now, no metaphysics, doctor," responded Brown; "I wish you to come and see the calisthenics." "Do you remember Greek enough, Brown, to tell me what the word means?" asked the doctor. "Since you ask me I don't think I do;" replied Brown, "but it is this sort o' thing you know;" and Brown threw out his arms and his legs and bobbed his head with a vigor not equaled by many jumping-jacks sixty years of age. "Ah! I have heard of that sort o' thing," replied the doctor. "Now, our old Prof. would say that it is derived from '*kalos*,' beautiful, and '*sthenos*,' strength. I shall be pleased to see how 'beautiful strength' is derived from that sort o' thing." Brown looked sharply at the doctor, who maintained an immovable countenance, and they were soon on their way to the school. Arrived at the house, and the doctor duly introduced to Miss Smith, they seated themselves on the platform and waited for the hour of opening. Brown signified to Miss S. that he would like to have his friend witness the calisthenics. Miss S. declared that her day would be filled with rainbows if she could have the pleasure of showing this keystone of the public schools to such an appreciative friend as the doctor must be. "Nothing like health, doctor; learning is sub-secondary; of what use is arithmetic to a dead man?" The doctor professed his ignorance and admitted that a man felt better when well, than when ill. Soon the school was assembled. The children sat in lines of geometrical exactness: the funereal aspect of their countenances was only equaled by the cemetery smile of Miss S. as she struck the hand-bell with the air of a hotel clerk in the height of the season. The Bible was read, and a few primary songs sung, such as "Down in the Coal Mine," "Pull Down the Blinds," "Capt. Jinks," etc., when the calisthenics were announced. It must be borne in mind that the pupils had just entered school fresh from a run in the yard and from home, and the appropriateness of such exercise at this time was not apparent. They went through the usual ones, for P. S. No. 505 had no copyrighted set. They stood on one foot and then they stood on the other. They beat their little chests with a force that would not have injured their health or a mosquito; they tipped back their heads until some lost their balance, and had their names put down in a little book as candidates for an additional exercise for increasing the flow of the blood to the surface, when the company should go; they tipped forward, until the bottom of their spines was prominent. Six hundred children simultaneously stamped the right foot and scraped the left

along the floor; the same number turned their heads, first to the left three times, then to the right three times, then all folded their arms and sat down, with the same corpse-like gayety they began. Miss S. turned about as if she would say, "There, they've got health enough to last them until to-morrow."

When Brown and the doctor reached the street, Brown exclaimed, "Well, doctor, what do you think of that?"

"I think it is nonsense," and the good doctor was strongly tempted to prefix an adjective not yet admitted into the regular text-books; had he done so, I think the recording angel would have been as merciful as he was in years long past to his namesake of blessed memory.

"Ah! I see," said Brown, "makes 'em too healthy; interferes with the trade;" and he smiled at his little joke; but a glance at the doctor's face showed that he was in no mood for joking. "Come," said Brown, assuming a serious tone, "tell me your objections. I thought you would be delighted. I found the exercises in the school when I took charge; was told they were the right thing, and have always thought so."

"As a health exercise," rejoined the doctor, "they are useless. Indeed, some of the motions are positively injurious. What you most admire, their uniformity, is their bane. All life is drilled out of the children. Exercise that does not interest the mind, fails to benefit the body. These motions in their class-rooms between recitations, accompanied by rollicking children's song, for three minutes, are beneficial; but, as conducted this morning, harmful. The children were standing for twenty minutes, and I saw by the daily papers, that, in some schools, hardly a morning passes that some child does not fall in a fainting fit. What for? Show! Don't wince, my dear fellow, that's what it is. Personal vanity of teacher and trustee play their part. The average visitor says, 'What a fine school! What discipline! What exactness! How wonderful!' Hang it!" exclaimed the doctor, getting red in the face, "why don't you get six hundred wooden children, strung together with pegs and wires, for the edification of this class of visitors, and let the little fellows be at their work?"

"Again," continued the doctor, "they cost too much. Too much time is wasted in securing this uniformity, which no one will maintain is essential to gain whatever of health may be in them. How much time is expended daily upon them?" asked the doctor.

"Oh, I don't know; five or ten minutes each morning; a little longer this morning, on account of your presence," replied Brown.

A smile played over the doctor's features as he continued: "Among my patients is a teacher in P. S. No. 506. Speaking of this subject, she told me she was expected to drill her class ten minutes each session; this, added to your ten minutes in the morning, makes thirty minutes in the day; occasionally her class was detained a half to three-quarters of an hour, practicing, because a stray arm or leg would protrude at the wrong time. Several boys are frequently punished to teach them which is the right hand; and her fellow-teacher had a pupil punished for winking with his left eye, when he should have performed this health-giving motion with his right; that each morning she is obliged, in common with other teachers, to keep a pencil

and paper to note down the names of those pupils who are not yet sufficiently wooden to meet the notions of the principal, who comes round and punishes them according to the aggravation of the offense. Frequently the whole department is detained for a drill and a lecture, when, in the presence of the trustees, the pupils failed to keep their eyes fixed on a certain fly-speck on the wall to the end of a bar of music. I fear P. S. No. 505 will be no exception, for I observed three boys who crooked the little toe on the right foot, when the order was 'to curve the little digit of the left member of the body.' So three-quarters of an hour is not far from a fair average expended on exercises that are but remotely beneficial, if at all. This, too, when there is no time to train the observing faculties of children; no time for kindergarten exercises, but little time for drawing, and their reading is an ear-rasping performance; but three-quarters of an hour can be found to make a bass-wood image of a child, and all for show."

"No, health, doctor," said Brown.

"The cry of health in connection with such exercises as we have just seen is on a level with the annual cry of reform in politics. The latter induces the milk-giving public to stand quietly while several hungry leeches are added to the vigorous horde already there. The former induces the hard-working parent to be quiet, while his son, who has but one more year at school, expends an hour a day for three weeks in learning a new set of calisthenics for the next exhibition."

"But the children must have some exercise," said Brown, in a more softened tone than heretofore. "Certainly," replied the doctor; "bears are a healthy race, yet no one ever heard of a calisthenic bear to drill the cubs? Imagine the scene! Let the infant classes frequently sing, march and join in motion songs in their class-rooms, as a relief to their lessons. The older ones can use a dry, well-ventilated and lighted play-room for similar exercises. Furnish the room with bars, horses, swings, etc. Let the teacher take her class there once a day, and more health will be derived from a ten minutes' play, directed by brains, than is received from the so-called calisthenics in a year. The children will like it, the teacher, seeing its good effects, will also enjoy it. And the abominable practice of turning three or four hundred children into a school yard for fifteen or twenty minutes, and leaving them to their own devices, will cease."

As the doctor ended, they reached the corner of the street, and each took his own way.

"Toby was always a queer fish," murmured Brown to himself; "he vexed the soul of our old Professor by constantly asking 'what is the use?' I see he hasn't forgotten it. I wish he hadn't said anything about calisthenics; I fear I shall not admire them so much in the future; I must think what I can do about it."

Gentlemen of the Boards of Education, Trustees, Principals and Teachers, let us adopt Brown's resolve, and *think about it.*

PHILO.

Brooklyn, Dec. 2, 1876.

ANTISEPTICS IN SURGERY.

The *Journal d'Hygiène* for August 15th, 1876, contains a very interesting article from the pen of the editor, Dr. Prosper de Pietra Santa, on the use of the sulphites as medicinal agents, and on their employment in surgery. The writer says:

"At the meeting of the Academy of Sciences, held on the 14th of July last, M. le baron Larrey presented, on behalf of Dr. Minich, of Venice, a very interesting memoir on the antiseptic treatment of wounds by means of the sulphite of soda. The experiments, which are very numerous and varied, were made in the large hospital in Venice, and the details of many of them were conducted on the suggestions of Dr. Polli. These experiments were made for the purpose of finding a substitute that would advantageously replace the carbolic acid used by Mr. Lister in his antiseptic method of treating wounds.

Dr. de Pietra Santa long since identified himself with the ferment theory of diseases and their treatment by means of the sulphites, and on all occasions he has zealously seconded the labors of Dr. Polli, of Milan. In 1872 an article appeared in *L'Union Médicale*, which was republished, subsequently, as a brochure, with the title: "*Des Maladies par Ferment Morbifique et de leur Traitement par les Sulfites Alcalins et Terreux. Pathogénie et Thérapeutique: Travaux du Docteur G. Polli, de Milan. Analyse et Notes du Docteur Prosper de Pietra Santa. Paris, Baillière et Fils*, 1873."

The present article is in part a résumé of his former publication, which was devoted to the *medical* use of the sulphites, and it gives, besides, the results of very numerous experiments lately made with the alkaline sulphites in the treatment of *surgical* cases. Their employment as external remedies is not entirely new, although we have never seen their advantages so clearly set forth as they are in the present article. The powerful action of the acid, in concentrated form, or in the form of gas, on the gastro-intestinal mucous membrane was the great obstacle to its use as an internal remedy, and it was to obviate this objection that Polli sought to combine it with other substances, as bases, so as to permit its internal use without destroying its valuable properties. Polli says: "After many experiments I have solved the great difficulty, by combining the acid with alkaline bases in the form of sulphites of potash, soda, magnesia and lime." (Apud Pietra Santa, ut Supra, p. 9.)

Still the acidum sulphurasum ($S O_2$) has long been in use as an external application. "A strong solution of the acid may be diluted with about an equal bulk of glycerine or some other liquid." (Essentials of Materia Medica, by A. B. Garrod, M.D., F.R.S.; New York, Wood & Co., 1865.) Both the *sodæ sulphis* and the *sodæ hyposulphis* have been used more or less extensively in lotions and other external applications by English surgeons, and they have also been employed to some extent in this country. (Vide Garrod, ut supra, p. 135.) In the present article the writer says:

"The sulphite of soda effloresces readily, when exposed to the air;

it is very soluble in water, and is well adapted for solutions, lotions and fomentations. It has been extensively used in hospital practice, and wounds and varicose ulcers which had resisted every other mode of treatment before employed were speedily changed and improved so much that the patients were always prompt in attendance when their wounds were to be dressed.

"Solutions of the sulphites are successfully employed.

"1st. In dressings for burns, wounds and injuries, whenever there is any puriform exudation.

"2d. In gargles, whenever there is false membrane present on the buccal or pharyngeal mucous surface, or around the tonsils.

"3d. As a lotion for the skin in eczematous and erythematous affections, and in redness of the face, and also in the lying-in room.

"4th. As an injection in fluor albus, in dysmenorrhea, and in eruptions on the genital organs presenting the characteristics of acne."

"The conclusions to be drawn from these patient investigations are:

"1st. That many diseases—the so-called *catalytic*—originate primarily in a fermentation of the principles of the blood.

"2d. Sulphurous acid has the property of preventing and arresting the fermentation of animal and vegetable substances.

"3d. The antifermentative properties of sulphurous acid are found in their most useful form in the alkaline and earthy sulphites, which are well borne by the system.

"4th. To render the presence of the sulphites still more durable in the system, and to retard their conversion into sulphates, it is necessary to substitute for the sulphites the hyposulphites of the same base.

"5th. The diseases in which the beneficial effects of the sulphites have been determined are, affections that are characterized by a pathological ferment of some kind, malarial fevers, puerperal fevers, affections arising from the absorption of purulent matter, diphtheria, phthisis pulmonalis, during the period of softening, and during the breaking down of the tubercles, solution of continuity accompanied with acrid secretions, and severe wounds and varicose ulcers.

"We again, as after the discovery of these agents, extend to all our confrères, *per urbem et orbem*, along with professor Polli, an earnest appeal to make further experiments, to continue clinical observation, subject to the strictest rules of generalization and scientific exactness."

There are many other exceedingly interesting topics treated in this article which want of space will not allow us to notice. The theory of fermentation, on which all the author's conclusions depend, must be interpreted by the reader in accordance with his preconceived ideas.

Note. The author gives the following formulæ and adds: After many trials we have adopted the formulæ which appeared in the *Annales de Chimie de Milan*, November, 1876.

No. 1. Take	Sodæ sulphis	1 part.
	Distilled elder water	12 parts.
	Alcohol, camphorated	2 "
Mix.		
No. 2.	Sodæ sulphis	1 part.
	Distilled rose water	12 parts.
	Glycerine	3 "
Mix.		

Editor's Table.

The Public Health.

Mortality per 1,000 inhabitants, annually, from all causes and certain special causes.

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,068,350—5 wks. end'g Nov. 25.	774	2093	20.52	115	2	109	70	13	51	28	36	1	34	69	378	361
Philadelphia, 825,500—5 wks. end'g Dec. 2..	500	1552	19.53	46	47	64	18	1	47	2	76	3	6	20	264	175
Brooklyn, 506,000—5 wks. end'g Dec. 2....	398	919	18.88	31		83	42	2	44	11	12		16	6	151	120
St. Louis, 498,000—3 wks. end'g Dec. 2....	88	245	8.55	11		18			4	1	4		2	7	42	28
Chicago, 420,000—2 wks. end'g Dec. 2.....	155	330	20.42	8		34	53		16		6		3	3	36	32
Baltimore, 350,000—5 wks. end'g Dec. 2....	209	560	16.64	21		12	77	2	13	5	16	2	3	4	108	33
Boston, 352,000—4 wks. end'g Dec. 2.....	178	506	18.65	21		33	27		5	5	12		6	8	84	52
Cincinnati, 265,000—5 weeks end'g Dec. 2..	131	395	15.2	21	15	19	2	1	5	1	18			19	70	67
San Francisco, 275,000—month of Oct.....	180	526	22.95	30	52	61	10		12	2	28		3	12	49	37
New Orleans, 210,000—month of Nov.....	142	524	29.94	23	24	6	1	8	3		6	*	3	23	84	34
Washington, 160,000.....																
Pittsburgh, 142,000—5 wks. end'g Dec. 2...	101	229	16.77	21	7	15	8	2	16	1	6		2	2	30	27
Newark, 126,000.....																
Providence, 101,500—month of Nov.....	55	146	17.1	3		31	1		9		7		1	3	20	24
Milwaukee, 100,781—month of Nov.....	129	218	25.95	4	59	18	28		4		9	1	1	3	9	5
Rochester, 70,000—month of Nov.....	35	107	18.34	6		5			3	1	6		1	2	14	8
Richmond, 72,500—5 wks. end'g Dec. 2....	46	120	17.22	3		8	1		2	4	2			5	27	10
New Haven, 60,000.....																
Charleston, 57,000—4 wks. end'g Nov. 11...	55	153	34.89	7		24			2		6		1	2	16	6
Toledo, 50,000—month of Nov.....	24	41	9.84	5		1			5					1	4	6
Mobile, 40,000—month of Oct.....	26	78	23.4	3							1		1	8	16	1
Dayton, 36,000—month of Nov.....	14	37	12.33						2		2			1	5	3
Nashville, 27,000—month of Nov.....	27	73	32.44	3		25	2		2		1		1		12	6
Wheeling, 28,000—2 months end'g Nov. 30.	27	83	17.81	6		2	17		1		8		2		9	8
Buffalo, 170,000—month of Nov.....	31	128	9.	10		4			4	1	6		1		21	14
Knoxville, 13,000—month of Nov.....	2	9	8.30	1											2	4
Paterson, 39,000—month of Nov	33	80	24.61	1		27	1								14	6
Petersburg, 20,000—4 wks. end'g Nov. 25..	10	29	17.4	4		2			1	1					3	3
Lansing, 8,400.....																
Selma, 8,000—month of Nov	6	12	18.	1											1	3
Elmira, 20,000—month of Nov	12	20	12.44								1				3	2
Hudson Co., N. J., 170,859—2 m. end'g Nov.	257	583	20.47	27	10	45	27	2	14	1	16	3	2	21	70	92
Yonkers, 17,500—month of Nov	9	21	14.4	1		3	2								4	5
Memphis, 45,000—month of Nov	30	88	23.46	5		2	4		1					12	8	13

* Yellow Fever, 6.

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during two weeks ending November 4th, 11,900 births and 6,478 deaths were registered in London and twenty other large towns, and the natural increase of the population was 5,422. The mortality from all causes was per 1,000—in London, 20; Edinburgh, 14.50; Glasgow, 21; Dublin, 19.50; Portsmouth, 18; Norwich, 22.50; Wolverhampton, 22.50; Sunderland, 18; Sheffield, 26.50; Birmingham, 20; Bristol, 18.50; Liverpool, 22.50; Salford, 35.50; Oldham, 29; Bradford, 23; Leeds, 23; Hull, 19.50; Newcastle-upon-Tyne, 21.50; Leicester, 21; Manchester, 23.50; Nottingham, 21.50. Other foreign cities at most recent dates per 1,000: Paris,

24; Rome, 19; Vienna, 22; Brussels, 22; Berlin, 26; Hamburg, 23; Calcutta, 24; Bombay, 26; Madras, 35; Amsterdam, 22; Rotterdam, 29; The Hague, 22; Christiana, 16; Breslau, 24; Buda-Pesth, 34; Turin, 18; Alexandria, 46; Copenhagen, 18; Munich, 36; Naples, 20.

Bermuda.—Registrar-General's Annual Report, 1875.—Population: 5,038 whites; 8,264 colored. Births: 139 white; 334 colored. Annual ratio per 1000: 27.59 whites; 40.41 colored. Marriages: 107. Deaths: 129 whites; 204 colored; ratios per 1000: 20.64 whites; 24.69 colored. Of the total number 24 were of zymotic diseases, and 39 consumption. 19 deaths occurred among the troops, a proportion of 8 per 1,000; and the number of sick among them averaged for the year 33.4. Meteorology: Rainfall, the greatest of twelve registered stations, 48.74 inches; smallest, 26.64. Temperature, from registers kept by the Army Medical Department at Prospect Hill, 151 feet above the level of the sea, highest in August, 94°8; lowest in March, 35°2. Mean for the year at 9 A. M. 72°43; at 3 P. M. 74°32. The report throughout bears evidences of great painstaking and accuracy.

Brooklyn's recent calamity, by the burning of her most fashionable theatre and the destruction of 292 lives on Tuesday night, December 5th, in *default of a fire police,* is one of the most impressive lessons of *criminal mortality* of modern times. The detail of all the fatal circumstances of this calamity have been universally given by the press and the pulpit; both are apparently at their wit's end to find parallel disasters, and they emulate one another in recalling to memory other approximate horrors due to the same criminal disregard of human life, displaying them before the public gaze as a warning for the future. But we fear that like the numerous calamities which have preceded it, differing only in degree, the impression will be only ephemeral. In the absence of laws for the protection of human life, the extensive publication of that which everybody knew before, that in the erection of such buildings the safety of life receives little or no consideration whatever; that the civil authorities habitually neglect to impose any obligations commensurate to the dangers incurred or to impose any adequate punishment for their neglect—no particular reason will be made to appear why such a catastrophe is not in the ordinary course of things. The investigations are not likely to find anybody in particular to blame. And, in particular, why should the civil or State authorities impose any restrictions on the owner, builders or lessees of theatres or other structures in the interest of private enterprise or pleasure, when they habitually neglect means for the preservation of human life throughout the State and nation? Of the 500,000 deaths which now annually occur in the United States, upwards of one-fifth are due to preventable causes, no less criminal in their relations, than were those which resulted in the destruction of the 292 lives by the burning of the Brooklyn Theatre. 25,000 persons are killed annually by typhoid fever, with causes as easy of recognition and as preventable as inflammable curtains and paper ceilings. In the State of New York alone there were over 2,000 deaths last year from typhoid fever; and the victims of school-house crowding, tenement-house smothering and liquor poisoning may be estimated by thousands. And yet, against these no less criminal—because perennial—causes of death, the pulpit is comparatively silent, and the press passes them by as conditions too common for particular notice. We would be the last to plead any extenuation of the Brooklyn crime, and we sincerely hope that it may be the means of arousing public attention to the necessity of such enactments as will show just appreciation of preventable mortality in all its phases. Iron curtains for stage scenery, and asbestos painting for all woodwork exposed to the flicker of gas-jets, and a fire-police with the necessary

appurtenances for all theatres and assembly halls, would be a good beginning, and one which should not involve much delay.

Service Pipes and Water Distribution in City Houses was the subject of a paper by Mr. James C. Bayles, at the meeting of the New York Public Health Association on the 14th ult., in which he considered the materials for service pipes, piping, and distribution of water; protection of service pipes from frost; precautions to be observed to guard against unhealthful conditions resulting from an interrupted water service, and disposal of the waste of water, and overflows. He described the various pipes known in the trade, and considered the dangers of metallic poisoning from lead, black and galvanized iron, tin-lined lead, tin-lined iron, glass-lined iron, enameled and composite pipes, chemically and practically, and the conditions of workmanship. He urged the practical advantages of giving all branches from vertical lines of service pipe, if of lead or other soft metal, a continuous support, and showed the advantages of such an arrangement, by means of illustrations drawn from his observations and experiences.

The problem of protecting pipes from frost was more fully considered, and many valuable suggestions were given which showed an intimate acquaintance with both the theory and practice of plumbing. A method of protecting the buried section of pipe between the main and the foundation wall—which was made clear by black-board illustrations—was useful in affording security at the point where freezing usually entails most trouble and expense. Instead of being carried straight in on a level with the tap, the pipe should be extended perpendicularly down below the lowest depth to where frost is likely to penetrate the soil, and the vertical section, including the tap, boxed and packed with some non-conducting material. Various methods for protecting pipes inside the foundation walls and throughout houses were described, and the hygienic importance of safeguards against an interruption of the water service was forcibly dwelt upon, followed by some practical suggestions as to what should be done to seal a house against sewer gas during a season of interrupted water service.

With regard to safe wastes and overflow wastes, he recommended that they should be made a separate system from the waste and soil-pipe system, and should not have direct communication with the sewer, discharge into the soil pipe, nor into any branch waste trap. The safe and overflow wastes should be run into one waste pipe of suitable size, emptying into a tank or sink in the cellar.

There would thus be no direct connection between the sewer and the inside of the house which could not be closed in case of necessity.

The conclusion of the paper was followed by an interesting discussion of the subject, in which Professor Chandler, Drs. Janes and Bell, Mr. Partridge and others took part.

The Fire on the Hearth.—To the Editor of THE SANITARIAN: I have in my office one of those "Open Stove Ventilating Company's" stoves, advertised in THE SANITARIAN, and find it to be all the company claim for it—"combining the advantages of an open grate and stove."

There is no doubt the air heated by these open ventilating stoves is healthier than the overheated dry air by other contrivances which admit of no means of ventilation; and consequently I believe the open ventilating stove will, and ought to come into general use as a public benefit. Yours truly,

R. HESSE, M.D.

Brooklyn, N. Y., Nov. 26, 1876.

Student's Lamps have long been known to possess superior advantages to gas, on account of the steadiness and whiteness of the light. As ordinarily made hitherto, however, it has been

unsafe to handle them on account of the oscillation of the oil through the overflow tube. We are gratified to learn that this difficulty has recently been overcome by Mr. J. G. Knapp, 28 Frankfort Street, New York, from whom Student's Lamps, as thus improved, may be obtained.

Improved Garbage Boxes and Sink Traps.—An ash and garbage vault has been designed by the Ash and Garbage Company, of this city, to receive garbage and refuse matter from all classes of buildings. The receptacles are made of galvanized iron, holding half a barrel or more each, placed in a chamber built in the sidewalk, near the curbstone and below the flagging, covered and secured with iron doors and chains. It is claimed that this device will prove a complete remedy for the dilemma in which the city has hitherto been pretty constantly staying, namely: First, the stationary garbage box, which, if of metal, as it never is, is never emptied, and keeps its unsightly and fermenting contents in the open air, or, if of wood, becomes itself soaked with the drainings of the filthy mass; and second, the removable garbage box, which pretty generally stands full or is upset into the street. In the vault, it is claimed, decomposition will be retarded while the garbage gatherer delays his coming. Models of the vault and of a new sewer gas trap and tank can be seen in working order at No. 985 Eighth Avenue.

Literature.

Transactions of the Texas Medical Association:—Seventh and Eighth Annual Sessions, 1875 and 1876, pp. 223, and pp. 212.

Few Medical Societies of the same age can show better evidence of progressive work than the two volumes before us.—"On the 15th day of June, 1869," we are informed, "there assembled the representatives of twenty counties, to confer as to the propriety of organizing a State Medical Association in Texas." From that meeting has grown a State Association which now numbers one hundred and eighty members, and twenty county and city Medical Associations.

Following the annual address of the President, A. J. Clopton, M.D., on the importance of Society organization in general, the volume for 1875 contains:

Report on the Science and Progress of Medicine, D. R. Wallace, M.D.; Climatology and Epidemics, John H. Pope, M. D.; Epidemics in Denison, Calvert and Columbus, R. H. Harrison, M.D.; Malarial Hæmaturia, T. J. Heard, M. D.; Malarial Hæmaturia, E. P. M. Johnson, M.D.; Tetanus treated with Chloral Hydrate, O. H. Seeds, M.D.; Hydrophobia, W. J. Burt, M. D.; Trichiniasis, B. C. Hadra, M.D.; Psychological Medicine, J. H. Sears, M. D; Psychological Medicine, J. J. Burroughs, M. D.; Report on Surgery, Thos. D. Wooten, M. D.; Esmarch's Bloodless Operation, M. A. Taylor, M. D.; Surgery: Cases Reported, J. Cummings, M.D.; Surgery: Cases Reported, W. H. Park, M. D.; Skin-Grafting, etc., C. W. Trueheart, M. D.; Carcinoma, and Stricture of the Rectum, H. Ryan, M.D.; Lithotomy: Report of Cases, G. Dowell, M. D.; Lithotomy: Operation, etc., H. Ryan, M.D.; Hernia, G. Dowell, M.D.; A New Obstetric Forceps, C. W. Trueheart, M.D.; Gossypium Herabaceum, O. H. Seeds, M. D.; and State Board of Health, R. H. Harrison, M. D.; *In Memoriam*, Dr. Benjamin Baden Throop.

The volume for 1876, after the minutes, opens with a sterling address by the President, Dr. H. W. Brown, thoroughly catholic in scope, in regard to the mutual duties of members of the medical profession, and of their special duty to the State. "To secure interest and co-operation of the people in any measure, even for their own protection, all schools must unite, every sect be represented in unbroken front. No ethical quibbles or therapeutic disputations must be allowed to distract the attentions, or confuse the purpose of appeal. Ethics

being the pronounced relations which should exist among men, in community, may certainly be modified for the accomplishment of so great a purpose... I believe it beyond question, that practicing physicians, the rank and file, the true and tried custodians of public health and professional morals, are the only reliable arbiters in this matter. And the only way to secure this arbitration is to unite the whole profession (as the people understand it), laying aside all ethical and therapeutical differences, and, as one man, petition, importune, and wrestle, if need be, with our Legislatures, until they incorporate the County Societies, giving them power, of course, to determine the qualifications of their members, after organization, and making a certificate of membership in one of said Societies the only legal evidence of qualification—and a penal offense to practice without such certificate of membership and good standing.... Only by some such measures can the profession accomplish its constant wish, discharge a plain duty, determine who may practice medicine, regulate the sale of patent medicines, the compounding and dispensing drugs, secure wholesome legislation as to quarantine, police and public health, and strangle the hydra-headed monster, quackery, ere our borders are defiled."

Following the President's address, the contributions are:

The Eucalyptus Globulus, by Richard Bibb, M.D., a Prize Essay; Report on the Science and Progress of Medicine, John H. Pope, M.D.; Gynæcology, Thomas D. Wooten, M.D.; Anatomical and Physiological Differences between the White and Negro Races—the Modification of their respective Diseases and difference in treatment, W. J. Burt, M.D.; Climatology and Epidemics, J. R. Taylor, M.D., and J. T. Norris, M.D.; Indigenous Medical Resources, A. R. Kilpatrick, M.D., and cases of practical importance on various subjects by others, all going to show an Association alive to a common interest in professional advancement. *In Memoriam*, Professor JAS. M. GALLAWAY. The papers on Climatology and Epidemics, State Board of Health, and the Eucalyptus Globulus, are worthy of special mention for their sanitary aspects, as showing a just appreciation of the necessity of legislation for the promotion of the public health.

In Texas, as in New York, there are, unfortunately, to be found many persons influential with legislative bodies, who, while incapable of devising any means themselves for the promotion of State medicine, like the dog in the manger, are ever bent on doing all they can to prevent others from doing anything. But the world moves, notwithstanding, and State medicine with it. People are everywhere learning more and more to regard preventable mortality as criminal mortality. And the physicians of Texas, as of other States which have not yet succeeded in securing State Boards of Health, do well, by their patience and persistence, in continuing to exert themselves for the enlightenment of the public by their frequent publications of the common sources of diseases and poverty —for all sickly communities are poor communities—and in thus doing, they do most to fulfill their mission to the communities among whom they dwell, and for the promotion of the best interests of mankind everywhere.

Transactions of the Tennessee Medical Society, 42d Annual Session, April, 1875. pp. 153.

The most important record in the minutes is] an elaborate report of a committee on amendments to the Society's Constitution, resulting in a recommendation to adopt that of the Medical Society of Pennsylvania — than which it could scarcely do a better thing. The subject was laid over until the next annual session—the transactions of which session we have not yet received, but from a report of the proceedings in the *Nashville Journal*, we are glad to learn of its adoption. The papers and reports in the volume before us are:

Annual Address by the President, Jas. B. Murfree, M.D.; State Board of Health, E. M. Wight, M.D.; Hour Glass Contraction of the Uterus, Thomas Menes, M.D.; Cholera as it appeared in Tennessee in 1873, J. H. Vandeman, M.D.; Dipsomania, Swan M. Burnett, M.D.; Use of Obstetric Forceps, Thomas Lipscomb, M.D.; Catarrhal Fever and Capillary Bronchitis, F. K. Bailey, M. D.; Tuberculosis, Thomas L. Maddin, M.D.; Electricity, J. Saudek, M.D.; Incised Wound of the Abdomen puncturing the Descending Colon, S. M. Thompson, M.D.; Esmarch's Bloodless Method of Operating, Van S. Lindsley, M.D.; Suppurative Otitis Media, A. Blitz, M.D.; Cooper's Dictionary of Practical Surgery and Encyclopædia of Surgical Science, Paul F. Eve, M.D. The mere enumeration is sufficiently suggestive of the practical nature of the contributions. In a sanitary point of view the report on a proposed State Board of Health is of special interest, although the effort was unsuccessful. It consists of a brief rehearsal of the labors of a special committee, of which Dr. Wight was chairman, in drawing up and having submitted to the Legislature such a measure, and of its rejection "*on the grounds of economy*"—on the report of a legislative committee which "was composed largely of medical men"! The reporter confesses to having "relied too much upon common sense and the value of the measure," and regrets that the bill was not "persistently *lobbied.*" A continuance of the work is hopefully recommended.

Annual Report of the Managers of the State Lunatic Asylum, Utica, N. Y., for 1875.

The number of patients admitted during the year was 432; on the first day of December, 1874, there remained 572. Whole number treated during the year, 1,004. Of this number, there were discharged, recovered, 132; improved, 37; unimproved, 134; not insane, 5; died 61. Remained in the Asylum, Nov. 30, 1875, 635. Daily average under treatment, 595, which number has been exceeded only five years since the institution was first opened in 1843.

Of the probable exciting causes of insanity in those admitted during the year, there were attributed to: Ill health, 212; intemperance and vice, 49; puerperal, 21; masturbation, 19; paresis, 17; and to other specified causes from 8 to 1.

Of occupations there were, of housekeepers, 115; farmers and laborers, 88; house work, 60; workers in wood, 17; no occupation, 13; students and clerks, of each, 12; workers in leather, 9; workers in iron, 8; saloon-keepers, 7; factory operatives, merchants and teachers, of each, 6—of others from 5 to 1.

Of the systematic pathological investigations which first became a distinguishing feature of this Institution, the managers express themselves with great satisfaction. The work has been prosecuted with commendable zeal; and it is gratifying to know that similar institutions in both Europe and this country are following the example. The Institution is in a flourishing condition in all respects, eminently creditable to its managers and officers, and an honor to the State.

Smithsonian Contributions to Knowledge. *Tables, Distribution and Variations of the Atmospheric Temperature in the United States, and some Adjacent Parts of America.* Collected by the Smithsonian Institution and discussed under the direction of JOSEPH HENRY, Secretary. 4to. with charts and illustrations, pp. 344. By Charles A. Schott, Assistant U. S. Coast Survey, Member of Nat. Academy of Sciences, Philadelphia, etc. Washington, D.C.: Smithsonian Institution, 1876.

This is one of a series of publications comprehending a substantial record of all reliable meteorological observations that have been made in the United States since the early settlement of this country, both previous to and since this duty was transferred to the Signal

Service of the U. S. Army in 1874. The present volume gives tables of mean daily temperature for each month, season and year, with isothermal charts, graphical representations and explanations; deductions from the charts of the distribution of the mean annual temperature and of the distribution of the temperature during the winter and summer seasons, daily fluctuations of the atmospheric temperature, with analyses and variability hourly; results for dates and mean annual values, and range in connection with geographical distribution of stations, etc., etc.—of great value to every student of meteorology.

Living too Fast; *or, the Confessions of a Bank Officer.* By William T. Adams, (Oliver Optic). Author of Indoors and Out, The Way of the World, etc., etc. Illustrated, Handsome Cloth 12mo. pp. 351. Boston: Lee and Shepard. New York: Charles T. Dillingham.

This is an interesting story of a bank officer, illustrating the too common practice of living too fast, and portraying the unhappy result in crime and escape from deserved punishment—except by an upbraiding conscience—in contrast with a contemporary and upright character, who represents the true standard of business life. The story is well told, and contains practical lessons in human nature, which commend it as an entertaining and useful book.

Young America Abroad. By Oliver Optic—Vine and Olive. 16mo. pp. 412. Boston: Lee & Shepard.

This is the fifth volume of the second series of "Young America Abroad," containing the cruise of the Academy Squadron during the cruise along the shores of Spain and Portugal, and the travels of the students in the peninsula. A book full of sight-seeing and eventful episodes, with just enough of romance to fix in the mind the scenes passed over, and absorb the attention of the reader.

Hours with John Darby. By the Author of "Thinkers and Thinking," "Odd Hours of a Physician," etc., etc. 16mo. pp. 250. Philadelphia: J. B. Lippincott & Co.

To those who have read "Thinkers and Thinking" and the "Odd Hours of a Physician," it is only necessary to announce this book; they will be sure to get it; for whether they have or have not fallen in with the philosophical train of thought which characterizes the author, they cannot have failed to profit by his sententiousness, impressing a volume of thought on a page of type. But they will be interested to know—as those who have not read "John Darby's" previous reflections will—that this little work, so full of thought, chiefly consits of reflections on a subject of universal interest; the philosophy of love, which is shown to be a bitter-sweet—a something which, of all the associations of earth, comprises the most or contains the least. Home, with all its endearing and unendearing qualities, is shown in its true relations to love, wife.—And a short chapter on *Nooses* will not escape the attention of the matrimonially inclined reader, especially, nor fail to satisfy him in its context, that it is not best for boys to run down hill with shut eyes, or for men to take lodgings with an executioner.

The Young Trail Hunters; or, The Wild Rider of the Plains. The veritable adventures of Hal Hyde and Ned Brown, on their journey accross the great plains of the Southwest. By SAMUEL WOODWORTH COZZENS. Illustrated. 16mo., pp. 235.

A book of extraordinary adventures and hair-breadth escapes, containing some instructive lessons in connection therewith, and of absorbing interest to boys.

Frederich Froebel. A Biographical Sketch. By Matilda H. Kriege. With portrait. Price, in paper, 25 cents; cloth, 50 cents. New York: E. Steiger.

Thousands of parents and children all over the country, to whom Mr. Steiger has introduced the delights of the *Kindergarten System* of instruction, will be glad to get this sketch of the author of it, and learn of the hardships which he encountered in his childhood days and how he overcame them; how he gathered information by the way-

side; how he became a teacher, and entered into all the feelings and pursuits of his scholars; of the enthusiasm with which he pursued his avocation and surmounted the numerous difficulties which beset him, and his finally triumphant success in the Kindergarten road to knowledge. Commendable to all parents and teachers who would make the education of their children a pleasure rather than a burden.

Flaxie Frizzle. By SOPHIE MAY. Illustrated. 16mo., pp. 182. Boston: Lee & Shepard. New York: C. T. Dillingham.

A very pretty story of an impulsive little girl who fell into thoughtless, and sometimes dangerous freaks, very trying to the patience of a good stepmother, who finally made her a very lovely character by gentle treatment.

The Reading Club and Handy Speaker. Selections in Prose and Poetry.—Serious, Humorous, Pathetic, Patriotic and Dramatic, for Readings and Recitations. Edited by GEORGE M. BAKER. No. 4. 16mo., pp. 103. Boston: Lee & Shepard. New York: Charles T. Dillingham.

A practical and useful book for children and youth, well described in its title page. The selections are well chosen and entertaining.

Transactions of the Medical Society of the District of Columbia for July, 1876, comprehend reports and discussions by Drs. Thompson, Hartigan, Streeter, Busey, Macall, Triplett, Murphy, Johnston and others, on fracture of the skull; congenital syphilis; diseases of the liver; congenital hydrocephalus; hydro-pneumothorax; tabes mesenterica and pneumonia.

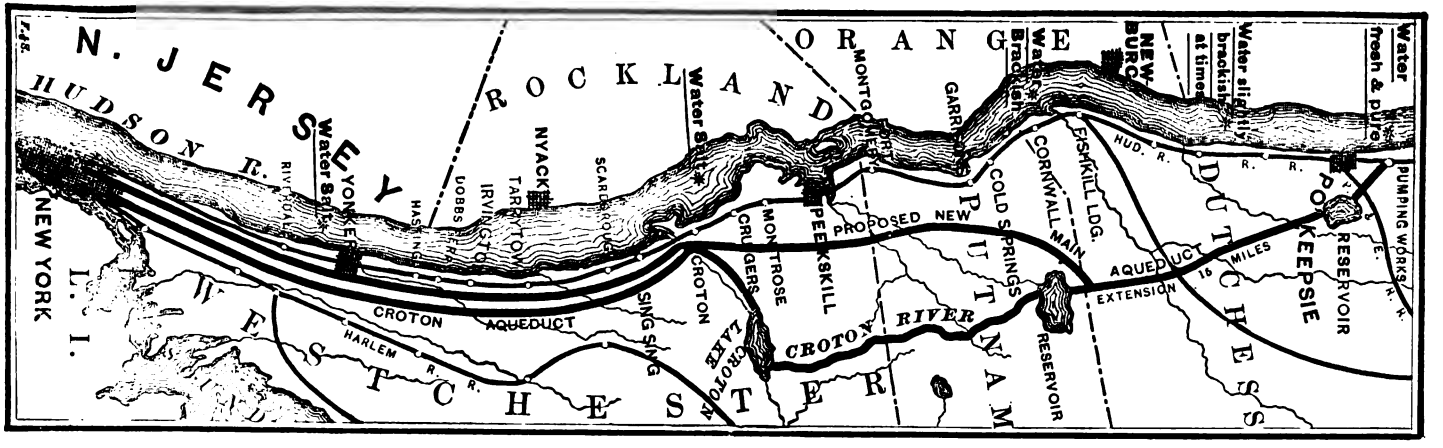
The Annual Register.—We are in receipt of a copy of the ANNUAL REGISTER OF RURAL AFFAIRS for 1877, published at Albany, N. Y., by LUTHER TUCKER & SON, and mailed to any address for the nominal sum of 30 cents. It is the oldest (and now the only) publication of the kind, and contains 150 pages of practical matter, interesting to every resident in the country, illustrated with no less than 140 beautiful engravings, almost all original. We notice particularly a capital article on "Practical Ventilation," which discusses this all-important topic in a clear and at the same time scientific manner, giving fully illustrated descriptions of all the improved systems. Elaborate almanac pages are prefixed, and a very useful feature is the "Farmer's Register," which gives the addresses of all the reliable dealers in everything a farmer needs to buy—live stock of all kinds, seeds, implements, nursery stock, &c., &c.

Books Received.—Transactions of the New Hampshire Medical Society; Tenth Annual Report of Connecticut Hospital for the Insane; Transactions of the Colorado State Medical Society; Report on the Registration of Prevalent Diseases, F. W. Draper, M.D.; Transactions of the Medical Society of the State of Pennsylvania, Vol XI., Part I.; Medical Libraries of Boston, J. R. Chadwick, M.D.; Census of Rhode Island, June, 1, 1875, Part II.; Water Supply and Drainage of Farm Houses and Buildings in their Sanitary Relations, Prof. W. H. Brewer; Powers and Duties of Medical Officers of Health; Inefficient Registration of Causes of Death; Compulsory Registration of Diseases, J. McGrig or Maclagan, M.D.; Geological Survey of Indiana, Reparative Surgery, Gordon Buck, M.D; Report of Board of Health of Philadelphia, 1875.

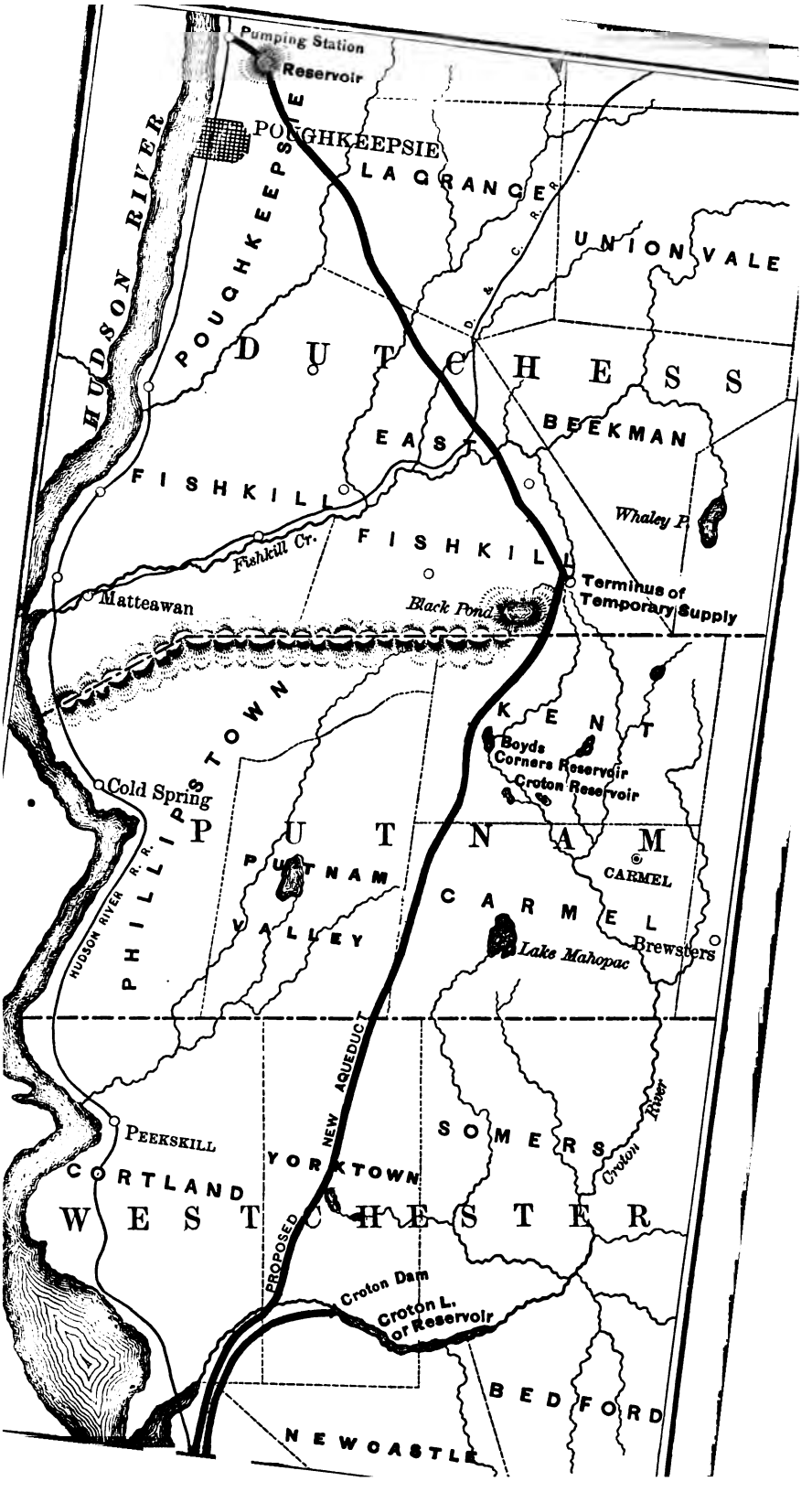
Subscribers are reminded that with this number a new year begins, and the obligations incurred for making THE SANITARIAN worthy of their continued support and prompt recognition.

All checks and Postal Orders should be made payable, and **all communications** should be addressed **to the Editor; New York, P. O. Box 1,956.**

NEW YORK WATER SUPPLY.—Hudson vs. Croton



This map, of a portion of the Hudson River country, is designed to show the location of the Croton Aqueduct, from the city to Croton Lake, the Croton River and tributaries, extending to Dutchess County, and the most northern of the reservoirs. Also the line of the proposed new water main from latter point or northern tributaries to Poughkeepsie (15 miles), to connect the Hudson River supply with the present Croton system. The line for the proposed continuation of this water main to New York, in place of the new aqueduct now advocated, is also shown.


Pumping Station
Reservoir
POUGHKEEPSIE
LA GRANGE
D. & C. R.R.
UNION VALE
HUDSON RIVER
POUGHKEEPSE
DUTCHESS
EAST
BEEKMAN
FISHKILL
Whaley P.
Fishkill Cr.
FISHKILL
Terminus of
Temporary Supply
Matteawan
Black Pond
KENT
Boyds
Corners Reservoir
Croton Reservoir
PHILLIPSTOWN
Cold Spring
PUTNAM
CARMEL
PUTNAM
VALLEY
CARMEL
Lake Mahopac
Brewsters
HUDSON RIVER R.R.
NEW AQUEDUCT
PROPOSED
Croton River
PEEKSKILL
SOMERS
YORKTOWN
CORTLAND
WESTCHESTER
Croton Dam
Croton L.
or Reservoir
BEDFORD
NEWCASTLE

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. FEBRUARY, 1877. No. 47.

THE WATER SUPPLY OF NEW YORK.

SUGGESTIONS FOR A PERMANENT AND ECONOMICAL SETTLEMENT OF THE QUESTION.

THE HUDSON RIVER

As an Available, Unlimited and Unfailing Source.

PLAN FOR THE RELIEF OF THE CITY BEFORE ANOTHER SEASON.

To the Mayor of the City of New York.

DEAR SIR:—The water supply of New York has at last become a subject of so much public concern that I feel justified in submitting to you, or through you to the proper officials, certain conclusions which I believe indicate truthfully the fallacy of the past and the present system, and point to the only practical, economical, and permanent solution of the whole subject. These views have been arrived at from quite a thorough knowledge for years of the Croton system, and from the devotion of considerable time and means to the development of the plan here submitted. Coming, as they do, from a private citizen who has no iron pipe, right of way, or engineering ability to sell, I trust they will be accepted, as they are presented, with the desire solely to serve the public good.

During the excessive drought of 1869 and of 1870, I advocated the Hudson River (at the nearest point where it was pure and fresh) as a source of supply for New York, and at that time urged upon the officials of your city the wisdom of considering the subject, not only as providing security against just such a serious state of things as has existed during the last few months, but in the interest of economy and permanence, when compared with the expenditures being made and contemplated in Putnam County.

Again, in the emergency of 1873, when the Board of Aldermen entered into an investigation to ascertain some source of relief, I submitted similar arguments, with additional plans and surveys. These were considered in connection with the Salt Water, Adirondack, and other projects, and were favorably received by the Board of Health, leading citizens, insurance interests, and the press in general. The officials who should have been the most interested were, as usual, found to be so wedded to a continuance of the reservoir system at the Croton head, that they ignored the investigation altogether. This led to an indifference which prevented any decisive action. An oppor-

tune rainfall, that filled the Croton temporarily, finally drowned out the aldermanic ardor for deciding a question so vital to the interests of a million of people, and one that must as certainly be met as that New York will remain the metropolis of the continent.

An examination will show that if the plan then proposed had been adopted, the city would in less than a year have been provided, in addition to the Croton, with a daily supply of fifty million gallons of pure, wholesome water, and at an expenditure but little, if any, greater than has since been incurred in expedients that are, in the judgment of competent authority, but make-shifts. Thus would have been averted not only the evil consequences that have attended the scarcity of supply, continuous for nearly six years past, but the alarming water famine of the present season, which has been more detrimental to business and domestic interests than the total cost of the remedy then proposed.

Since 1873 I have not been an indifferent observer of the situation, but by personal inspection of the Croton tributaries and sources in times of long drought, noting the gradual but steady diminishing of the supply, and prosecuting still farther the necessary engineering inquiries, I have become strengthened in the conviction that New York incurs a great hazard by relying longer on her present treacherous system, and that the Hudson River is the only wise, cheap, and immediate source from which both temporary and permanent security can be derived. To give a clear understanding of the whole subject in this connection, it seems proper to consider it in its different phases.

The Croton Considered.—It must be assumed that New York has gradually outgrown the Croton system, if we consider the multitude of facts that have been developed the past few years in official and private reports, the persistent and almost constant complaints and criticisms in the public press, and the alarming situation of the present season. These facts warrant the assumption that the Croton has at last proved a FAILURE, not only in providing an adequate supply, but in maintaining its freedom from contaminations and impurities, and that, whatever provision may be made in increased storage capacity to meet the deficiency, will only add to the latter evils.

An inspection of the entire Croton district this summer and autumn has revealed a destitution of water not at all consistent with the official estimates and promises of the past few years, or the bolstering up which the system has received from certain sources. While the city has been rapidly increasing in territory and population, the streams and springs that form the Croton have been as certainly diminishing, and to an extent for five years past that has excited unusual comment. Springs often reported by the Commissioners to be never-failing have now no existence; large streams have become rivulets, and small ones have disappeared altogether. It is an important fact bearing on this subject, and confirming the belief in the failing supply from the Croton water-shed, that the very streams and water sources in Dutchess county (in the vicinity of the Croton tributaries), from which the city of Poughkeepsie seven years ago comtemplated taking its water supply (now three millions of gallons a day), could not in October of the last year or of this have furnished *one hundred gallons* a day. One stream, large and never-failing in 1868, promising abundance by storage, and which had many earnest advo-

cates among our citizens, was as dry most of the time for several months of this and of last season, as the middle of Broadway. The recent failure of the Vienna water-works, built a few years ago at great cost, is an illustration of the uncertainty of relying on a limited inland water-shed. The main cause of their failure is said to be due to an over-estimate of the drainage area, resulting, in a season of drought, in so great a diminution of the supply that the works delivered less than half of what was actually required.

A published report of Engineer Tracy, made in the year 1870, and confirmed by present investigations, makes it plain that no extent of storage capacity at the head of the Croton can be depended upon longer than a few years at the most, to meet the demands of the city in a time of drought like this, when succeeded by as dry a year as the past. According to Mr. Tracy, it would have required that year a storage capacity of THIRTY-TWO BILLIONS OF GALLONS for a million and a half of people. The total storage capacity stated at that time (and it is the same now), including the large reservoir at Boyd's Corners (then under completion, but estimated), the reservoirs in New York, Croton Lake, and also three feet of drainage from the surface of the lakes in Putnam county, was less than SEVEN BILLIONS OF GALLONS, or not one-fourth of the requirements for the city's prospective population ten years hence, with such a season of drought as that of 1870, or that from which it is now suffering. And still more important is the fact, which can be verified by estimates, that to provide for such a population will require the construction of TEN ADDITIONAL RESERVOIRS of the capacity of the one at Boyd's Corners, which is two billions seven hundred thousand gallons. Where is the water coming from to supply these reservoirs? Mr. Tracy estimated, from a gauge kept of the flow of water over the Croton dam, that from 1860 to 1869 the average surplus waste a day was three hundred and forty millions of gallons. The flow has been gradually decreasing, until it is stated that the waste will not average for any hundred days of this year a hundred million gallons a day. Commissioner Campbell reports that this summer the Croton River has almost dried up; that since June 23d there have been but four days when any surplus water has flowed over the dam at Croton Lake. As it will take about three hundred days, with only a surplus of one hundred millions of gallons a day, to fill ten extra reservoirs, and as there have not been a hundred days this year when that surplus could be relied upon, it is a very pertinent inquiry, Where is the water coming from to fill more than three of these ten reservoirs?

Impurities.—But a more important consideration, even admitting they could be filled, is, what will be the condition of the water stored for a long time over a surface of more than four thousand acres, subject to all the deleterious influences incident to the wash of fields and hill-sides, spread out to the heating and evaporating rays of the sun, to become nauseous and slimy with decaying vegetable matter?

Experience has shown that it is not possible to protect from defilement water collected from a surface drainage like the Croton area, and then stored as at present and as is proposed for the immediate future. This has already been proved in the treatment of the present

supply. At times, for the past few years, so foul and offensive has it been as greatly to aggravate the evils of scanty supply. So impure was it in November and December of last year, and after a severe rainfall in July and August of the present season, that the press of the city devoted entire pages to complaints and to discussions of the subject. One of the most remarkable facts noted was, that while the rain-fall was greater in the former month than in any other July since 1873, the Croton supply was impure and had a foul odor, not only through the entire month, but through the preceding one, thus contradicting the theory that want of water causes the impurities.

The following extracts from editorials, in five of the leading New York papers, indicate the calamity that threatens the city from this cause:

"OUR FILTHY AND DISGUSTING CROTON.—Our people are perhaps not fully aware that they are daily pouring down their throats water absolutely reeking with filth of the most disgusting quality. In a show-window at the corner of Broadway and Seventeenth street there are now on exhibiton two jars of water, one containing a yellowish, dirty liquid somewhat like kerosene. That is our Croton, from the regular supply-pipe. It would be amusing, if it were not so serious a matter, to witness the astonishment depicted on the countenances of the people that congregate there, contemplating the serious effect on their health and that of their children, as it occurs to them that this liquid is their daily drink. Something must be done, and that quickly, or the health of more than a million of people will be imperiled."

"Many private families and hotels are resorting to other sources for water for table use."

"Through the Croton Valley are stables, slaughter-houses, and privies, drained into the water that New Yorkers must drink."

"An examination of the Croton shed showed a general destitution of water prevailing the whole section. Croton Lake is a reservoir of filth, and the storage reservoirs a repository of farm filth."

"MALARIA IN CROTON WATER.—Dr. Lente, a distinguished physician of Cold Spring, Putnam Co., attributes the malaria in this city to the drawing down of the reservoirs and lakes in his county to supply the Croton. The general effect of the present system is to expose thousands of acres of land previously under water to the air, rotting and parching in the sun, then steeped in rain water with the first shower, which, when thus polluted, finds its way to the city conduits."

"THE CROTON CESSPOOL SYSTEM.—Is it possible that the engineers of the Croton aqueduct cannot devise a remedy for the fearful evils that surround us, arising from an impure supply of water to this city? Have we reached the limit of engineering skill in this respect, and is the condition of the Croton water to grow from bad to worse? These are questions which every intelligent citizen of New York is asking just now, in view of the formidable dangers to the public health which the horrible condition of Croton water creates."

"THE FOUL CROTON WATER.—The truth is, that our water system is being botched, and no amount of scientific twaddle can conceal the fact. Water that is charged with objectionable animal matter, the drainage of farm-lands and swampy grounds, and in fact made the medium of conveying away the refuse of a thickly-settled region, can-

not be filtered by 'contact' with 'the great motionless mass of water at the dam,' neither will the bright idea of cleaning the Park reservoirs help matters. The supply is poisoned at its source."

"THE CROTON SHAM.—The whole Croton system is a sham and a delusion, no longer endurable. It is a fraud on the people to spend another dollar to perpetuate it. Better go to Lake Ontario at once, if necessary, no matter what the cost, rather than suffer the losses and discomforts entailed upon this great city through this Croton deception. It is notorious that for the last five years there has not been a dwelling-house in the higher districts that has had a flow of water above the second story, and much of this time manufacturers and others have been scrimped and often compelled to suspend business altogether, because of the meagre supply. This condition of things began in 1868, and has been growing worse ever since, until it is no longer bearable. For the hundredth time we are now told again by the officials not to be alarmed, that there is an abundance of water lying around loose up in Putnam and Dutchess Counties, and it only needs plenty of new ponds to give us a bountiful supply. We don't believe it. We were told the same thing repeatedly when the new Boyd's reservoir was under construction, and if possibly that failed to meet the demands in time of great drought, then drawing down the lakes was certain to supply the deficiency. Boyd's reservoir has been finished and filled, and the last drop drawn out of it. The lakes have been drawn from to an extent never intended, threatening the health of the entire section, and arousing the indignation of Putnam County residents, and still we are suffering from a thirst and famine in the city never before experienced. Away with any more promises of reliance from that section, but let us demand that those whose business it is shall look, without a day's delay, to some other source of water-supply for this famishing population, which will guarantee an abundance of pure quality now and for all time."

A New Croton Perplexity.—One of the main arguments of the advocates of the Croton has always been the dependence to be afforded in times of need by the numerous small lakes draining into it. A draught was made on these in 1870, and again in 1873, that exposed their malarious margins to an extent that carried fevers and diseases into numerous households, and caused the removal, for a time, of many of the near residents. So serious was the matter that the people decided to appeal to the Legislature, and a member of the House was elected on that issue. In 1873 a bill was introduced by Senator Robertson, on behalf of the citizens of Putnam County, to prevent the drawing off the water of the county lakes and reservoirs below the normal level, as it was attended with great sanitary and other injury, from which they should be protected. This bill passed the Senate, and was only defeated in the Assembly through the most strenuous efforts of the Croton Aqueduct Department and the New York members.

This season the reliance upon these lakes has been put to its severest test, and while, by the extremest measures, New York has been saved from an absolute water famine, it has been done to the detriment of health and property in Putnam County that is truly alarming. One of the fairest lakes in the valley has been so depleted of

water as to destroy its beauty (all the value it was supposed to possess) and make its fair banks a breeder of disease and death, and to foreshadow the ruin of private estates of great value. Owners of property about these lakes have just commenced legal action against the city for large damages, and they purpose, the present winter, to insist upon special legislative protection. It is claimed that present State laws prevent the depletion of all such inland lakes as these, and that question is now before the courts for decision. An injunction has just been granted, restraining the Croton Board from drawing farther at present from Lake Mahopac. Success in either case will be likely to negative any farther encouragement of the Croton system, and if it comes before other provisions are made, and a drought occurs, it may illustrate the folly of being too long indifferent to public interests.

Various Plans Proposed.

For ten years past, plans and suggestions have been discussed for meeting the question. Among the first was an aqueduct to Lake George or the Adirondacks, two hundred miles long. While some of the aqueducts in other countries may furnish a precedent for such a vast and costly undertaking, New York will not for years, probably, be in a condition financially to consider such a scheme, even if there was apparent necessity for it. Another, also costly, and the supply subject to all the existing objections, is to utilize the waters of neighboring Connecticut streams.

Salt Water.—The latest proposition, and one which, to the astonishment of those best informed, has found many advocates, is to pump salt water from the river and separately distribute it through the city, for extinguishing fires, cleansing streets and sewers, and other sanitary purposes. This plan seems open to the following grave objections:

The necessity for separate distribution-pipes throughout the city and for fire-engine facilities of a character not to be affected by the saline nature of the water, and the establishment and maintenance of pumping machinery—all of which can only be effected at enormous cost and great inconvenience to the people.

In case of partial conflagration, more damage is usually caused by water than fire. If salt water were used, the loss from the destruction of merchandise would be much greater in many cases, especially where machinery, hardware, or fine textile fabrics were exposed. Salt water, obtained as proposed, would, to a greater or less extent, be foul. The rivers receive the contents of the city's sewers and other filth, as well as that of the opposite shores, and whoever has crossed by the ferries at certain stages of the tide, need not be told the nature of the water. This objection would increase in force proportionally with the city's growth. To add the silt of New York harbor to the salt itself would largely aggravate the losses arising from its use. It may easily be imagined what the disastrous effect would be in the case of a slight fire in a Fifth Avenue residence, if its floors were flooded and its walls saturated with this saline, filthy, and odorous fluid; or in one of the extensive stores of Lord & Taylor, where, in addition to the above, thousands of dollars' worth of goods would be exposed to almost total ruin.

Salt water, and notably dirty salt water, is not well adapted for cleansing or sanitary purposes of any kind. In the winter its use must create an evil similar to that of salting the streets.

Finally, and most conclusive of all, to say nothing of the engineering difficulties, it would in the end prove—like all others hitherto—but a temporary, unsatisfactory, and costly expedient.

What is wanted is an additional supply, reliable in quantity and quality, that may be distributed through the pipes and appurtenances already in working order, and needing only an increased flow to render them effective; a supply that may be enlarged to any desired extent, from time to time, as the requirements of the city and its suburbs may demand.

The Hudson River.

From the Hudson can be had an inexhaustible quantity of water, pure and sweet, within fifteen miles of the present Croton tributaries. This bountiful supply comes in a never-ceasing flow from the innumerable lakes and rivers of the Adirondack wilderness—the home of brook trout—a section never destined to be cleared of its forests or settled by a numerous population, to lessen or contaminate its water production.

It is freer from organic matter and more wholesome in the vicinity of Poughkeepsie than at any other point below Troy (as frequently demonstrated by analysis), and in this respect is remarkable as being equal or superior to that of any other large river. When the State Hospital for the Insane was located here eight years ago, the question of water supply was one of the utmost importance. After the most careful scientific analysis, which is given below, the river water proved preferable to that of the lakes and streams in the interior of the county. Works for forcing it into the buildings were established, and it has been used since without any filtration excepting such as is derived from a settling process at the reservoir in the hospital grounds. Later the city of Poughkeepsie decided on the Hudson for her supply, invested a large sum for permanent works, and has for years enjoyed the blessings of water facilities which New York has never experienced, and never will until she comes to the same or a similar fountain-head.

The excellent character of the river water in this vicinity is also shown by the well-known fact that whale ships and other vessels bound on long sea voyages formerly came here to fill their casks and tanks, and that canal-boats plying between New York and Buffalo have for years made it a rule to take in their water for their trips at a point just north of this city. The section of the river between Poughkeepsie and Rondout has always been famous for furnishing the best water for laundry purposes of any part of the river.

Analysis of Hudson and Croton Waters.—The following analysis, by Prof. C. F. Chandler, of Columbia College, made for the State Hospital in 1870, shows the comparative impurities in a wine gallon of Hudson and of Croton water. One made since for the city of Poughkeepsie, of water taken a mile above the city, is similar in all respects. It appears from these tests that there are less organic impurities in the Hudson than in the Croton, and that the water is softer.

PRODUCTS OF ANALYSIS.	HUDSON.	CROTON.
Chloride of Sodium	.244	.402
Sulphate of Potassa	.116	.179
" " Soda	...	.260
" " Lime	.088	.158
Bi-Carbonate of Lime	2.502	2.670
" " Magnesia	.767	1.913
Alumina and Oxide of Iron	.297	a trace
Silica	.105	.621
Organic and volatile matter	1.239	.670
	5.358	6.873
Inorganic impurities	2.737	4.369
Residue on ignition	1.229	.670
Total residue on evaporation when dried at 100° F.	3.966	5.039
Organic Carbon	.373	.287
" Nitrogen	.134	.181
Nitrogen, Nitrates and Nitrites	a trace	.026
Oxygen required to oxidize organic impurities	1.029	0.627
Hardness, equivalent to Carbonate of Lime	1.840	2.480

When and Where Brackish.—The only argument I can conceive of, against tapping the river immediately at this point, is that once or twice in a lifetime it is liable to be slightly brackish for a short period. It has not been known to occur but twice in the recollection of the oldest inhabitant. The U. S. Coast Survey states its periodical appearance in the river as high up as this at about once in fifty years. The effect this season was so slight as to cause no general complaint or comment, and the water has been used profusely for all purposes. If the small amount of saline properties it contained, only slightly observable to the taste, could have the least effect upon health, it must be a very salutary one, for this city was never so free from diseases of all kinds as at this very time. But if necessary to avoid this objection, which is hardly worth considering, since it is so unlikely to occur, tap the river a few miles farther north, as the plan now proposes.

It might be shown by quoting from leading European authorities on the water supply of cities, that the contact of sea water with fresh water tends to destroy certain organic matters contained in the latter, rendering it freer from contamination, and that the purest and sweetest water in a river flowing to the sea is at the point where the last trace of salt disappears.

Will not become Contaminated.—It may be claimed by some that the sewage of the river towns above here, as the population increases, will contaminate the water to such an extent as to make it objectionable. This is contradicted by all scientific practices and theories. There are but two towns, Rondout and Hudson, in seventy-five miles, that at present have sewers running into the river, and the population of these is so small that any bad effects from their sewage is destroyed in the great body of water before it passes their boundary line. None of the villages can soon be expected to become sewered cities, the growth of population being so slow. Scientists,

who understand so well the power of great rivers rapidly to cleanse themselves, will sustain the Hudson—flowing incessantly and rapidly in a vast volume averaging half a mile wide and fifty feet deep—against the imputation of being fouled from such sources as the above during this or the coming generation.

The Royal Commission on the Water Supply of European Cities, in their investigations of this subject, obtained evidence from the highest scientific authorities. Referring to the river Thames, which, above the point where the supply for London is abstracted, is contaminated by the excrement of more than two hundred thousand human beings, they say:

"The noxious elements in the Thames would be sufficient to do great mischief were it not for a most beneficial provision of nature for effecting *spontaneously* its purification. Some of the noxious matter is removed by fish or other animal life. A farther quantity is absorbed by the growth of aquatic vegetation, while still more important changes are effected by chemical action. The chief agent in the decomposition of organic impurities in water is oxygen, and the process is greatly hastened by the motion of the water of running streams or rivers. Now as such waters contain much air dissolved in them, the decomposing agent is ready at hand to exert its influence the moment the impure matter is received into the water. The effect of the action of oxygen on organic substances in rivers is to break them up, destroy all their peculiar organic constitutions, and to re-arrange their elements into permanent inorganic forms, innocuous and free from any deleterious quality."

Plans and Estimates.

How to Give New York in ten months Fifty Million Gallons a day in Addition to the Croton.—Locate the requisite pumping-works on the river bank from two to five miles north of Poughkeepsie, at a point where the shore is abrupt and the water deep. Eligible sites may be had at small cost. The river anywhere in this vicinity will average two-thirds of a mile in width, and fifty feet deep from shore to shore. From these works the water to be delivered through eight thousand feet of pipe to a small reservoir on Flagler Hill, elevated five hundred feet above the river (the water level can be made considerably more), or to other high suitable ground near Vassar College; from here to be conducted through an iron main or mains fifteen miles, and delivered by gravity into one of the northern tributaries of the Croton, in the southern part of Dutchess County, or to be extended farther, and discharged directly into one of the reservoirs; and from this source to flow through the present channels and aqueduct to the city.

The proposed location for the pumping works and for the line of pipe for the whole distance has been examined, the heights have been approximately determined barometrically, and by level notes and railroad profiles. The entire line is through a farming country of unusually regular formation, and with a surface and soil well adapted for the economical and speedy prosecution of pipe-laying. The cost of right of way will be small, for the public highways may be used much of the distance.

First Plan and Cost.—The first and paramount consideration is to supply from the Hudson the full present deficiency of the Croton, and in time to insure the city against the recurrence, next fall, of the scarcity of the present and previous seasons. The second is, that the cost shall not be burdensome, and when incurred shall prove the inauguration of a permanent, reliable system, which will reflect credit on the city. This contemplates, for immediate use, pumping works of a service of fifty millions of gallons a day, and an iron main of a capacity of from forty to fifty millions, according to the elevation of the reservoir. The cost, at present prices of labor and material, of the system complete, may be approximately stated as follows:

River site, buildings and inlet pipes	$ 45,000
Pumping-engines, boilers and steam connections (one or two lifts)	475,000
Iron force mains to reservoir and laying	160,000
Small receiving reservoir, or stand-pipe and tower, and right of way	60,000
Fifteen miles of 48-inch iron main, $68,640 laid, per mile	1,029,600
Additional for small amount of ravine work and laying under water-courses	70,000
Right of way for pipe line	10,000
Office, engineering, legal and other incidental expenses	90,000
Total	$1,939,600

The estimates for iron mains and laying, and for engines and boilers—items that constitute about nine-tenths of the whole cost—were arrived at after consultation with some of the largest manufacturers of iron pipe and hydraulic machinery in this country. The remainder of the expenditures are based on the supposition that they are honestly made, and if so, are ample.

The system may be completed and put in operation by the first of September next, by contracting at an early day for the pumping machinery and iron mains, and prosecuting the engineering and other preliminary work through the winter. One-half of the pumping works, above estimated for, will probably be sufficient for the first season, and they can be increased as necessity demands.

Cost Compared with the Reservoir System.—The new reservoir at Brewster's Station, just commenced, will cost, as officially stated, $800,000, and the one to follow, now surveyed and located, the same, making $1,600,000. How much this includes we are not informed, but suppose that there are incidentals to considerably increase the amount. Add to this the cost of cutting the canals to private lakes and other preparations to drain them, the purchase of the water from private owners, and the various expenditures each season necessary to perpetuate the Croton, and you will have incurred an expense by the time the second reservoir is completed, exceeding that of the Hudson River system. One contemplates a delay (that may prove disastrous) of from two to four years, to insure seven billion gallons of additional stored water in a year of drought such as this has been; while the other proposes to provide in ten months for fifteen billion gallons a year. But the comparison must not stop here; to equal in storage the Hudson supply, two additional reservoirs must be built, and sixteen hundred thousand dollars more added to that account. Where the economy as well as the safety is, will not be apparent.

Cost of Pumping and Maintenance.—This can only be arrived at by comparisons, but few of which are at present accessible. Pittsburg claims to have the most powerful and economical pumping machinery in this country. It is used for raising water into a reservoir of three hundred and fifty-six feet elevation, and is estimated to raise seventy million pounds for each hundred pounds of coal consumed, the cost being at the rate of one cent for every 3,070 gallons. The cost at the Poughkeepsie works, including coal, maintenance, and repairs, is less than two cents for every thousand gallons used. The expenses for pumping the large quantity proposed for New York will be much less, proportionately, than the above, and cannot exceed per annum the sum that will be required to keep up even a meagre supply from the Croton, to protect it as far as possible from defilement, and to meet the interest account on the excess of expenditures for reservoirs over the cost of the Hudson River system.

Water-Meters and Waste.—It is a disputed point, whether it is desirable in a large city, with its vast system of sewerage, to check the free use of water. It is claimed that what is wasted in New York is absolutely necessary to cleanse the closets, vaults, sinks, waste-pipes and sewers. The former Commissioner of Public Works, Fitz John Porter, in his last report to the Mayor on this subject said:

"All water goes into the sewers, and the more we can afford to let run through the sewers and private drains, the more effective we render our sewerage system. The introduction of meters would cause people to economize to such a degree as to injure the public health, and would be a plan that would inflict an injury upon our densely populated city that would be incalculable. The importance of a full supply is too great to be dependent upon one aqueduct, and another should be built entirely away from and independent of the present one, that in case of an accident to one the other might not be affected by it."

While the usual daily consumption in times of sufficiency is claimed to be about one hundred gallons a day *per capita*, it is probable that the losses by evaporation and natural waste will reduce that below sixty-five gallons.

Ancient Rome had nine aqueducts, each more than forty miles in length, and bringing to the city three hundred and twenty-two gallons a day for each inhabitant, and still Frontinus the engineer reported that "the supply was only sufficient for all public purposes and amusements."

Second Plan.

Substitute for New Aqueduct.—Commissioner Campbell says in his report: "It is the opinion of many citizens, and my own, that an additional aqueduct is required from Croton Lake to the city." This proposition has and will meet with stubborn opposition on account of its large cost, estimated at ten millions of dollars. As a substitute that will be much less expensive, meet all the requirements, and assure not only a satisfactory head of flow at the highest points in the city, but increase the pressure in the lower and more populous districts, I propose the following:

Extend the 48-inch main from the 15-mile terminus, through Putnam County, thence along the line of the Croton Aqueduct, or by a

more direct and feasible route to the city. Connect this main with the pipes running to the higher and new districts as far as it will supply them, cutting them off entirely from the Croton. Supply the lower levels or remainder of the city with the present works.

The cost of the new main can be readily approximated by those familiar with the country along the line. It seems safe to estimate it as follows: (The pumping works, reservoir and pipe line being the same heretofore established, are not considered.) Distance from terminus of first main at the Croton tributary to New York, 68 miles; cost per mile laid, $68,640; for whole distance, $4,667,520. Extra for ravine work and excavating under water-ways, $115,000. Right of way say, $40,000; engineering expenses and incidentals, $160,000; total, $4,982,520.

Value of an Increased Head.—It is of the highest consideration that any new supply introduced at the cost of another main or aqueduct shall come from an elevation that will force the water to the topmost story of every building in the higher districts, giving a pressure, wherever it is carried, that will afford to manufacturers and others who provide the proper facilities, an almost certain protection against damaging fires, independently of the fire department. Every hydrant in the city should and can be made a separate fire-engine. Every sewer, sink, drain and closet can be made cleaner and purer by such an increased head and flow, and every fountain and hand-hose more effective. The benefits that must accrue to the city from this consideration can hardly be exaggerated. It has been demonstrated in Poughkeepsie and other places. Here, with a head at every hydrant sufficient to throw a stream with hose attached over the highest building, a fire seldom gets under way to do serious damage, and an extensive conflagration, or even the total destruction of any building, seems impossible. Manufactories, valuable buildings, and private residences are made almost secure against any destructive fire by a small outlay for pipes or hose running through each story and connected with the street main. The pressure is so great that any part of the building can be reached with the hand-pipe, or any story flooded by turning on the flow for that story. Thus fires have often been extinguished before the fire department could answer the alarm.

Third, or Large Main Plan.

River Towns Supplied.—A deviation from the above plans, which will probably be considered wise and prudent by many well-informed citizens, and which will certainly comport with the dignity of the chief city of America, would be the following: Instead of the 48-inch main, lay one of six feet, capable of delivering, with the elevation proposed, one hundred million gallons a day. Increase the pumping power and force-mains to meet it. Terminate this main for the present at the Croton Shed, and regulate its supply and delivery by the amount of water required or for the full capacity of the Croton Aqueduct. When the Croton is impure, take the whole supply from this source.

The cost of this plan will not largely exceed the previous one, and certainly not in consideration of its importance, and of the fact that a portion of the expense is to be borne by river towns. The increased

cost of 6-feet pipe over the 48-inch may be estimated at $36,960 a mile, $554,409 for the 15 miles. For pumping, machinery, $375,000; force mains and incidentals, $87,000; total, $1,016,400—which, added to the estimates of the first plan, make $3,110,000, as the total cost of a system for pouring one hundred million gallons of water a day from the Hudson into the Croton River.

Sooner or later extend this large main to the city, or terminate it in a reservoir in the suburbs elevated much higher than the present one, and connect it directly with the distribution as far as it will provide for it.

This plan also contemplates furnishing, by the new main or the Croton, the cities and villages from Sing Sing to New York, each one to bear a legitimate proportion of the cost of construction and maintenance, or to be supplied by the city on contract, or the same as regular New York consumers. This portion of the Hudson is gradually becoming one long marginal city, and will soon be a suburban arm to New York, peopled with her best and largest water-consuming citizens. The water supply of all this district is meagre to-day, and cannot be met in the future except by this or some kindred project.

Irvington, Hastings, Dobb's Ferry, and other villages with a rapidly growing and intelligent population, have now no general water system, while Sing Sing, Tarrytown, and Yonkers have been struggling for years for a sufficiency. The suburbs of these places and the river-bank for thirty miles now contain the most costly and elegant suburban residences in this country, with their attendant gardens, graperies, conservatories, and acres of expensively made lawns, the very existence of all which, to any degree of satisfaction, depends upon a profuse water-supply. Without it, all the large investment outside of the house goes for naught. Many of these places have suffered seriously by drought the past summer. While their lawns and flower-gardens have been dried, parched, and ruined, I have looked the entire season upon seven acres of grass-plot in Poughkeepsie that has been kept brilliantly fresh and green (permitting a mowing twice a week) by occasional artificial showers of Hudson River water taken from accessible hydrants, at trifling expense. These residents, as well as the cities and villages, will be liberal patrons of the new Hudson system; and from all these sources must come a revenue that will bear a considerable portion of the cost of pumping, maintenance, and interest on investment.

Permanency of the Plan.—Whichever plan is adopted, taxpayers can be assured that their money will be spent for a permanent system, and one that will require no patching or doctoring. To increase the supply at any time, to any extent, will only require an addition of pipes and steam-power. If we were to suppose that it ever will be deemed advisable to take the water higher up the river, the same pumping machinery and pipe line can be utilized. This plan would even be the pioneer in going to Lake George or the Adirondacks.

Conclusion.

The very life of New York—its safety from fires and epidemics, its advantages as a place of residence, its prosperity as a business centre,

and especially its manufacturing importance, all depend upon its water supply. Does the Croton present that security on which such vast interests can afford to longer rely? In the light of all the evidence before us, it does not, and there seems but one conclusion to be arrived at: That it is folly to rely longer upon a water system that has been so certainly proved to be a failure in both quantity and quality, and that it is a reckless waste of money to perpetuate it when another source, never failing and free from impurities, can be made available in a short time, and at a cost not exceeding improvements now contemplated. With a belief that a majority of the city's million of people now look upon this question as the gravest one they have to consider, and that they will not be lulled into security by fall rains or farther temporary expedients, and that it must soon, if not immediately, command the earnest and intelligent attention of those in authority, I most respectfully submit these views for your consideration.

Very truly yours,

H. G. EASTMAN.

———o———

Sanitary Progress in Germany.—Vienna has completed the rectification of the Danube and obtained a pure supply of water; and Berlin, although still in a deplorable condition, is trying to place herself on a level with London and Paris in the matters of drainage, irrigation and water supply. From a translation by Mr. Robert Manning, C. E., of the Regulations and Works proposed, extracted from the *Annales des Ponts et Chaussées*, we learn that drainage is now esteemed as great a necessity at Berlin as water is at Vienna. The rain and humid climate render this highly dangerous. A very primitive state of things remains; the streets are badly paved, the roads are narrow and dangerous, intersected by trenches which serve as drains and discharge into the nearest arm of the Spree the house-drainage. Stone flags give means of crossing these open drains or ditches. Rain-water from roofs flows on the surface, and latrines discharged into covered cesspools. In 1851, a sanitary scheme was proposed under Mr. Chadwick's inspiration: rules for the sanitary improvement of dwellings were framed in 1874, and the sewerage of the public streets undertaken. Sewers in the line of trenches are formed along the public ways. Pipe tiles in double lie through the streets, branch-drains of stone-ware or egg-shaped brick sewers, and main or intercepting sewers are used.

Berlin is situated on a plain, and thus the sewers cannot be connected with one another; in consequence of this the sewerage is divided into districts, each having its own pumping works. Liquids alone are allowed to enter the drains and syphons, and pumps are provided to prevent the entry of solids, which are removed by hand labor. A shallow system of sewage was desirable, as the land is level. Restitution of the sewerage to the land is accepted. Two estates of 800 hectares have been acquired at a short distance from the city, and about 30 meters above the pumping level. M. Habrecht's works have already cost ten millions of francs. The whole cost of works will be forty millions of francs. Since November, 1875, the drainage of Frederick-stadt has been in action, and the sandy estate of Marienfelder revivifies the sewage water which before polluted the river and made it a sewer.—*Public Health.*

THE SAFETY OF SHIPS AND THOSE WHO TRAVEL IN THEM.*

By JOHN M. WOODWORTH, A.M., M.D., Supervising Surgeon General, U. S Marine Hospital Service.

The waste of human life is everywhere. After the waste by war, in no field of human activity is it more stikingly illustrated than among the toilers of the sea. Every year brings its measure of disasters on the sea, seemingly with as much regularity as the seasons follow in the march of time. During the year 1875, 1502 American vessels are reported to have suffered disaster; adding to this number the 85 casualties to foreign vessels on our shores, gives a total of 1587. Of this number 477 vessels collided and 209 casualties were admitted to have arisen directly from carelessness or ignorance. Three hundred and twelve vessels, aggregating a tonnage of 102,512 tons, and valued, with their cargoes, at upward of ten millions of dollars, were wrecks involving a total loss. The number of lives imperiled in these disasters was 20,215 and 888 lives were lost, besides 73 persons drowned where no other casualty occurred to the vessel.

One hundred and fifty vessels were reported to the British Board of Trade in the year 1873–4 as not heard from after sailing or being spoken at sea. All of these are supposed to have gone down with the 2381 persons on board. Including these missing vessels there were reported to the same authority, in the same year, 6084 vessels as having suffered wreck, collision or other casualty, resulting in the total loss of 1411 vessels and 6817 lives. During the ten years ended June 30th, 1874, there were 22,098 wrecks, collisions and other casualties of vessels reported as having occurred on or near the coast of the British Isles alone. Over 25 per cent. of this number were total wrecks, involving a loss of over 8200 lives and the value of about $90,000,000 in property. With such a startling array of facts, it is no wonder that the appeal of Samuel Plimsoll has been heard around the world.

No thoughtful person will doubt that a large proportion of these casualties were preventable. They result chiefly from the use of unseaworthy vessels, from lack of the necessary amount of force, by reason of short crews and unseaworthy sailors; from overloading, or from ignorance, inattention or recklessness of officers. Exact statistics giving the causes of loss of vessels and life are only obtainable in a small proportion of the total number involved.

In the British mercantile service three-fourths of the casualties in 1873–4 are placed under the head—"other casualties," and in the statistics of the United States for 1874–5, three-fifths are so classed. In the British service for the year named, (1) "defects in ships and equipments" is the reported cause of 113 disasters; (2) "overloading" of 8, and (3) "carelessness, inattention or ignorance" is charged with 273; while (4) "collisions," the major portion of which should, without doubt, be charged under the last head, is the reported cause of 1537 disasters. In the service of the United States, 20, 3, 101 and

* Read before American Public Health Association, Boston, Oct. 5th, 1876.

986 stand over against the four last named causes respectively. Overloading is given as the cause of only eleven casualties in an aggregate of 7671, but most of the vessels that go down from this cause are a part of the long list of those never more heard from after leaving port.

Of United States vessels which suffered casualties in the year 1874, 5832 were under 10 years old; 478 over 10 years and under 25; 95 over 25 and under 50 years, while the age of over eleven per cent. is unknown.

Of the 21,109 vessels lost or damaged on or near the coasts of the British Isles during nine and one-half years ended June 30, 1874, 923 are known to have been over 50 years old, 12 of these being upward of 100 years, and over 10 per cent. of the whole number unknown.

Great Britain and her colonies and the commercial countries of Europe, together with the United States of America, have in the aggregate over 150,000 vessels, with a tonnage of nearly 19,900,000 tons, and an estimated aggregate crew of over 1,000,000 of sailors. It should be remembered, however, that the number of seamen required to man the vessels does not comprise the total number of sailors. There are probably 1,500,000 seamen belonging to Europe and the United States.

"The commercial marine of the United States represents our distinct nationality in all climes and upon all seas; an interest that has given more and asked less of the Government than any other of similar magnitude; an interest more essentially American in the highest and best sense, than any other which falls under the legislative power of the Government." Let us inquire what the Government has done and is doing to protect our ships and those who travel in them.

Under the power given by the Constitution of the United States, Congress assumed charge of all aids to navigation by act of August 7, 1798. During the Colonial period light-houses were established at twelve different points on the Atlantic coast from Portland, Maine, to Charleston, South Carolina; but under the wise policy adopted and steadily maintained by the Government in respect of this service, the number of light-houses and stake-lights now number 934. There are besides these 30 light vessels, 53 fog signals operated by steam or hot air engines, 413 day-beacons and 2971 buoys; 28 small vessels are employed as tenders. Some of the ablest scientific men of our times are employed in perfecting this great system of guides set up on the highways of commerce, and maintained free of expense, not only to our own vessels, but to those of every nationality. The Light-House Board are now experimenting with an automatic signal buoy, invented by a citizen of New York, which not only promises to make every dangerous rock "speak for itself," but by different tones, or interrupted blasts of sound, enables the mariner to determine his position in the densest fog or darkest night. With the ordinary ground swell this buoy has been heard from seven to nine miles.

The signal service is of recent application as an aid to commerce. Through a system of signal flags, displayed at our principal ports, it warns the seafaring of approaching storms, and through its instrumentality many disasters are averted.

The coast survey began in 1807, when the President was author-

ized to cause a survey to be taken of the coasts of the United States within twenty leagues of any point of the shores. This service has been conducted with great ability and vigor. It supplies the navigator with correct guides to the actual channels, which in many of our harbors are so changeable as to demand constant watchfulness. The Coast Survey Service has published a "Coast Pilot," which contains, for ready use by the seafaring, a digest of the information laid down on the charts. It is in the approach to the shore that the dangers begin. But thanks to the liberal wisdom of the Government in this direction, the captain, through the well directed labors of the coast survey, is forewarned and forearmed.

The Life Saving Service of the United States was inaugurated in 1850, but its establishment on its present efficient basis dates from 1871. The Life Saving Service stations now in operation number 135, with about 965 men employed, and 12 more stations are in process of erection. Since the present organization was begun, in 1871, up to the present year, 281 vessels have been driven ashore upon the line of coast protected by such stations, having on board 3,240 persons, of whom 3,197 were saved and 43 were lost. The revenue vessels of the United States, numbering 34, in addition to protecting the revenue, render efficient service to vessels in distress. Under the act of Dec. 22, 1837, the President annually designates about ten of these vessels to cruise during the inclement and dangerous season, specially prepared to render assistance to distressed mariners, and under these orders they are constantly cruising (not going into port except when absolutely necessary) from about December 1 to April 1. In the year 1875, 195 vessels in distress were assisted by the revenue vessels, and 81 persons saved.

The Marine Hospital Service, though directly concerned only in restoring the sick and disabled, could, through its medical officers, ascertain the physical condition of seamen before shipping, and thereby prevent unseaworthy sailors from endangering the safety of vessels as they now do. It is of common occurrence for a vessel starting on a long voyage to find on the first day out that one, two or three of the crew are unfit for service. They become a tax upon the vessel without rendering adequate return. The ship's crew, probably short at the start, or at least limited to the smallest number considered absolutely necessary to man the vessel, becomes by the unexpected reduction overtaxed and overworked, and consequently more or less inattentive to duty. On arriving in a foreign port, if the vessel is so fortunate as to reach a haven, the unseaworthy sailors can claim full pay for the time spent, and the master of the vessel must deposit three months' extra wages with the United States Consul for each seaman he discharges. Hundreds of such seamen are returned to the United States from foreign ports every year at the expense of the Government. Thus the Government and commerce are both unnecessarily taxed; many lives are sacrificed and property goes to the bottom of the sea from a cause preventable by already existing machinery. The application of the remedy rests with Congress. If put into operation it would work good to all concerned, especially to the shipping interests. The acknowledged efficiency of the life saving service of this country is without doubt enhanced by the physical ex-

amination of the members of its *personnel*, which is made yearly by a medical officer of the Marine Hospital service detailed for that purpose.

There remains for consideration in this connection the steamboat inspection service, which is more especially intended to prevent the loss of life on steam vessels. As early as 1838 a law was enacted, growing out of the frequent explosions which occurred on the rivers where high pressure steam power has, almost uniformly, been employed. Under this law a system of inspection, both of boilers and hulls of steam vessels, was established, and various safeguards provided, such as requirements in regard to safety-valves, life-boats, signal lights, etc. This statute was further amended March 3, 1843; but it was found defective in its operations.

The adoption of more efficient measures, however, did not take place until after the occurrence of a catastrophe unparalleled in the history of steam navigation. One of the largest and most elegantly equipped steamboats on the Western rivers exploded all of her boilers on her trial trip at Cincinnati, in 1851, blowing the boat into pieces and killing over two hundred people who were on board, and scattering fragments of their bodies on either shore of the river. Following this horror a law was enacted (Aug. 30, 1852,) which continued in force, with slight modifications from time to time, until its repeal by the act of Feb. 28, 1871, which is a codification of all previous laws, embracing additional safeguards which experience has proved to be desirable. The provisions of this law—which still remains in force—relate to means of preventing and extinguishing fire; the appointment of inspectors of hulls and of boilers, and their qualifications and duties; the construction and material of boilers, their working power and maximum pressure of steam; and finally the qualifications of ships' officers, who are required to be licensed by the local boards of inspectors.

This act, like every preceding act, has met with determined and persistent opposition. Before the law had been in force six months a convention of steamboat men met in Louisville, Ky., and resolved that they would use every effort to repeal it. They appointed a committee to frame a new bill, and a tax was levied upon the steamboat tonnage of the country, of five cents a ton, to effect its passage. The bill passed the House of Representatives and would have become a law, but for the opposition which it met in the Senate at that time and has met at every subsequent session of that body. No attempt will be made to review this bill, which contains many good suggestions. The chief objections urged against it, and which defeated its passage in the Senate, was the limited accountability of owners of vessels, in case of casualty, under its provisions.

Senator Conkling, in referring to the bill, remarked: "I say that as a law between the public and common carriers it is by itself in the whole history of civilized legislation; there is nothing like it; and I say, if you undertake to apply to railway companies or to steamboat companies the provisions of this bill, you might as well repeal all statutory provisions and remit men to their natural rights." Some of the provisions of the present law, which the last-named bill was intended to change, are doubtless impracticable and should be modified

or repealed; in some respects it is defective, and should be corrected by amendment. The yearly tax of officers as license fees seems to be an unnecessary hardship, as fifty or sixty thousand dollars is annually collected in excess of the expenses of the steamboat inspection service, and goes to swell the revenues of the Government. It would be better for the Government to assume the expense of this whole service as it has of the others named, except the Marine Hospital Service. Such action would remove much of the objection to its enforcement, which appears to be attended with great difficulty.

I will cite but two examples illustrating the failure in this direction. Not quite a year ago the steamship Pacific, with 238 souls on board, collided with the ship Orpheus off Cape Flattery. The latter, which received the blow on the side, suffered but slight damage, while the former, striking with her bow, and, so far as can be ascertained, with engines reversed, went to pieces, and every one on board, save two, went to the bottom. Fragments of the Pacific's timbers, which floated ashore at Beacon Hill, Rock Bay and Oak Bay, were reported "affected with dry rot to such an extent that they fell to pieces upon being handled." "In one instance a portion of her timber was found with a piece of sound wood bolted to a piece of rotten wood, and the bolt itself quite eaten away with rust." In an inquest on the body of one of the drowned, a former chief mate of the Pacific testified that her reputation was not that of a sound vessel; "her fastenings and knees could be seen working between-decks in the cabin," that "the house on the upper deck and the bulkhead creaked and moved," and "they were always calking her because she spit the oakum out of her seams."

Another witness testified as follows: "The certificates of the steamers are all renewed every year by Capt. Waterman (the local Government Inspector); he walks through the ship, looks at the fire hose, counts the buckets, and goes away again; at the same time, I have seen the fire hose and buckets borrowed from one ship to lend to another that was being inspected; I have seen good boats borrowed for the purpose of inspection, and after the inspection hung up on the wharf under a shed, because hanging on the davits is liable to spoil a good boat, and we got our own boats back again after the inspection, while the Inspector was down in the cabin getting a champagne lunch."

The local Government Inspector referred to above was charged with the investigation of the disaster!

Only a short time before the loss of the Pacific, the Florence, a ship 35 years old, swamped in open sea on the same coast, without any apparent reason, except that she was too weak to longer hold together when the weather was a little rough. A prominent citizen of Washington Territory, after referring to these disasters in a letter to the reporter, stated that "a large number of the ocean and river steamers now plying on [that] coast are utterly unsafe, and sure sooner or later to betray those who have to travel in them to untimely death." There is a pressing necessity for more efficient measures to prevent the wreck of these vessels and to check the loss of life. So far as steam vessels are concerned the provisions of the law are ample and only require to be enforced; but as respects the other vessels that make up the bulk of our commercial navy, absolutely nothing is done

by the Government to eliminate the unseaworthy craft, prevent overloading, or the sending of them to sea with short or unseaworthy crews. The "coasters," and the ship in the foreign trade, may not carry passengers, but they do carry sailors who have as brave and generous men among their number as travel in the cabins of steam vessels; if the latter require the care of the Government, the former are no less entitled to its protection.

—— —o———

Sunlight Necessary to Health.—In his last quarterly Report, Dr. John Liddle, the Medical Officer of Health for the Whitechapel District, says: "In building a new class of houses, for the better accommodation of the working classes, it is, in my opinion essentially necessary, as tending not only to promote their health, but to improve their moral condition, that every room should be light—that there should be no dark corners for the accumulation of dirt—and that the houses should not exceed four stories in height; for, unless the streets are made proportionally wide, the higher the houses the greater will be the absence of sunlight, and thus interfere with the proper ventilation of the rooms. High houses on each side of narrow streets, in which little or no sunlight is admitted, are not healthy. It is true that the current of air, without the accompanying heat of the sun's rays, cannot be considered as proper ventilation. A current of air passing through a tunnel may, perhaps, by some persons, be considered as efficient ventilation; but I apprehend that few persons with any regard to their health would like to reside therein. I firmly believe that many persons who are compelled to occupy rooms in which the rays of the sun never enter soon lose their health, and find it necessary to change their residence; and this remark applies, although perhaps with less force, to those who are confined to counting-houses during the day in which no sunlight is admitted. Sunlight is especially necessary for the healthy existence of children; and this is strongly pointed out in the evidence of the late Mr. N. B. Ward (the inventor of the 'Wardian Cases,' for rearing plants in towns, and conveying them to and from distant places. A gentleman of great eminence in the medical profession, and who had given much attention to the influence of the temperature, of air, and light on the health and growth of animals and plants) who says, in his evidence before the Commissioners appointed for inquiry into the state of large towns and populous districts, that, as the result of his experience, the influence of light is a matter of the highest importance to the proper physical development of the human species; and whatever stints the growth of a child certainly operates upon his physical capacity for labor; that the amount of disease among persons occupying light rooms is infinitely less as compared with that in dark ones; and that the influence of light, especially solar light, in preventing the fatal termination of disease, is a fact well known to him. In further illustration of this subject, Mr. Ward quotes a fact stated on the authority of Sir James Wylie,—"that the cases of disease on the dark side of an extensive barrack at St. Petersburg have been uniformly, for many years, in the proportion of three to one, to those on the side exposed to strong light."—*Public Health.*

THE ADULTERATION OF BREAD.

The "Manual of the Care of Public and Private Health," by Dr. Schauenburg, treats also of the adulteration of bread, which, fortunately, is among the greatest rarities in Austria. Dr. Schauenburg has the following on this subject:

The adulterations of bread are of many kinds, and altogether less known than is to be desired for the public good, especially that of the working classes, which subsist principally upon bread. In the first place, among these adulterations is the mixing of water, in the preparation of dough, in improper proportions. Three kilograms of flour should yield something like five of dough and four of bread. But frequently enough bakers add one more kilogram of water to the dough and subject it to too quick a heat, which soon causes the formation of a crust of a hard texture. Then this still remains, even if large air-bubbles form themselves in it, gummy and hard to digest. Such poorly prepared articles soon also begin to become mouldy and unfit for eating; and of all things of the same kind, bread becomes the least nourishing when it contains too much water instead of flour. Bread made of unbolted flour is not of itself prejudicial to the health. A certain amount of bran is present in all common bread; but through too great an admixture of bran, people make the bread larger in volume and cheaper in comparison with the weight, though by no means more nourishing, as one would be led to believe from one of Liebig's remarks. No one now asks for Liebig's bread, and with good reason; for even if the chemists are right in asserting that bran contains a rich quantity of the priceless gluten, Poggiale has pointed out that bran is composed of 21.6 parts starch, 2 parts of sugar, 2 to 3 parts oily matter, 7 parts of dextrine, 5 parts of albumen, and 34 parts of woody fibre—so can the physiologists affirm, in opposition to this fact, in order to condemn the use of bran-bread, that man's digestive powers are not sufficient to separate the gluten incorporated in the bran, so that it much more regularly leaves the system undigested. In a similarly deceptive case, Liebig made a more serious blunder when he gave, as Oesterlein calls it, the inconsiderate advice that the poorer kinds of flour should be mixed with lime-water. By means of this horrible mixture the crumbs do not take on a whiter or lighter appearance; but the bread, through the bad influence of the water, is heavier, yet without appearing moist. But this adulteration of bread continues, and the duped consumer enjoys a part lime instead of bread.

For a long time analogous adulterations have existed in neighboring countries, and here and there in Germany, according to the whim of the day, and have been by far too seldom censured. The purpose of them is to enable one from poor and spoiled flour to bake bread which is good in appearance, and to conveniently bring wretched products into the market. Each purchaser would give back a mottled and glutinous loaf, to consume these adulterated articles. High and low were sickly, and it was seldom that physicians, silenced by the police and attorneys, could discover the cause.

Gypsum, alum, clay, ashes, white lead, sand, chalk, pulverized bones, magnesia, etc., are the commonest of the various means of this kind which are used, the more willingly because they are cheap, and also directly increase the weight. In France and Belgium, where great value is attached to a white wheaten loaf, they even employ zinc and blue vitriol and other nostrums to aid in attaining this object; and through these, in some circumstances and by long usage, infallible evidences of poisoning are developed.—*Mueller Zeitung.*

———o———

Diseases of our Own Causing.—On an average, one-half of the number of out-patients treated by a hospital-surgeon suffer from diseases due primarily to a want of knowledge of the laws of health and cleanliness. 1. The ignorance of hygienic laws, which affects so disastrously the health of the rich as well as the poor, exists chiefly in regard to dress, ablution, and ventilation. . . The following are examples: Varicose ulcers from dress; skin-diseases from want of cleanliness; chest diseases and fevers from defective ventilation. The vast number of ulcerated legs treated in the out-patient department of hospitals, in work-house infirmaries, and in private practice, arise from varicose veins. Now, a varicose ulcer is caused by a distended condition of the veins of the leg, which have to sustain the pressure of the blood caused by gravitation. In varicose veins, the valves which help to support the column of blood are to a great extent destroyed, through the veins having been distended by mechanical obstruction to the free return of the blood from the extremities, thereby distending the lower veins and separating the edges of the valves. Thus, the weight of an uninterrupted column has to be borne by the veins. This, of course, causes further distension, giving rise to congestion of the capillaries of the skin, and causing swelling, eczema, and ultimately ulceration. Varicose ulcers are seldom admitted into general hospitals, so that hundreds of poor families are driven to the workhouse, and such cases form a majority in the workhouse infirmary. The most frequent and flagrant cause of obstruction is the ordinary elastic garter. Children should never wear them at all, as the stockings can be perfectly well kept up by attachment of elastic straps to the waistband. If garters are worn, it is important to know how to apply them with the least risk of harm; at the bend of the knee the superficial veins of the leg unite, and go deeply into the under part of the thigh beneath the ham-string tendons. Thus a ligature below the knee obstructs all the superficial veins, but if the constriction is above, the ham-string tendons keep the pressure off the veins which return the blood from the legs; unfortunately, most people, in ignorance of the above facts, apply the garter below the knee. Elastic bands are the most injurious. They follow the movements of the muscles, and never relax their pressure upon the veins. Non-elastic bands during muscular exertion become considerably relaxed at intervals, and allow a freer circulation of the blood.—*Popular Science Monthly for December.*

DEFORMITIES AND THEIR RELATION TO HYGIENE.

Cosmetics and High-Heeled Boots.

By T. P. Corbally, A.M., M.D.

The great blessings that Orthopedic Surgery has already conferred on suffering humanity, and the happiness which it is still destined to bring to many a saddened and despondent heart, gives it a claim to the grateful consideration of the public; and the immense progress it has made during the last half century, as well as the great necessity that still exists for more widely diffusing its blessings, renders it worthy of the most careful study of every physician who desires to merit the confidence he invites. The majority of people are not aware that most cases of deformity, whether congenital or acquired, can be perfectly cured, or so far relieved as to make life comfortable to the unhappy sufferer. Professor Sayre, in his Introductory Lecture, very properly warns them against employing ignorant pretenders. He says: "As there has always existed, and still exists, in the human mind, a disposition to admire the marvelous, and to be governed by decided assertion, without proper and careful investigation into facts, so men then became, as they now become, the dupes of the designing quack, who flourished and grew important through their weakness."

But would it be doing the profession much injustice to say that the majority of surgeons are not competent to treat deformities? To say that very few make themselves familiar with the details necessary to obtain success, is to state a well known fact. How many doctors would, under similar circumstances, be as much astonished as was Dieffenbach, when Dr. Little, who had been deformed from childhood, stepped into his office perfectly cured? He says: "A month had elapsed since Dr. Little had taken a letter from me to Dr. Stromeyer, in Hanover, when suddenly my door was opened, and the individual who had left me a cripple entered with a rapid and vigorous step. I can scarcely tell which was the greater, my astonishment or my pleasure. I immediately examined his foot, and found the shape normal, the sole in contact with the ground, and the arch of the foot nearly natural; the calf of the leg had begun to be developed, and the lower extremity had gained its full length. A miracle could not have struck me more forcibly; and I declare that I was never more surprised in my life at the success of a surgical operation than I was by this one; and I consider Stromeyer, who performed the operation, even more fortunate than Little, who reaped the benefit of it."*

"Et nunc erudimini qui drogatis terram." And now let those who prescribe drugs for the people learn their business, is good advice in the present case, even if given by one who satirized the foibles of the profession.

Like every other special subject, Orthopedic Surgery may be di-

* "Ueber die Durchschneidung der Sehnen und Muskeln." Berlin, 1841.

vided into three distinct departments: the *Historical*, the *Scientific*, and the Practical or *Operative*.

On the first of these subjects there remains little to be added since the publication of R. Volkmann's work, "On Diseases of the Joints," in von Pitha and Billroth's "Handbuch der allgemeinen und Speciellen Chirurgie," II. Band, 2 Liefer. Apart from the deservedly high rank the author's productions hold among scientific men, for extensive research, minute investigation and cautious judgment, this work, in its special department, remains without a rival as a literary production.

The second division of the subject has been ably handled by Luschka, in articles in Müller's "Archiv für Anatomie und Physiologie," on the development of the tissues, and particularly of the bones, during fœtal life; and by L. Fick, Ueber die Gestaltung der Gelenkflächen, in the same journal. Hueter, also, has contributed many articles on this subject to Virchow's Archiv, besides his exhaustive treatise on "Diseases of the Joints." His essay, "Zur Histologie der Gelenkflachen und Gelenkkapseln," and his "Studien an den Extremitätengelenken Neugeborner und Erwachsener," in Virchow's Archivs, are of unusual interest. We need not mention English authors here, for they are too well known; but the student will find the investigations of Toynbee, in regard to the structure of the synovial membrane, published in the "Transactions of the Royal Society of London" for 1841, of great value.

The operative, or mechanical part of this subject, has received by far the greatest share of attention, both from writers and practitioners, and yet, with rare exceptions, the mechanical treatment of deformities cannot be considered as even moderately successful. Prof. Lücke, speaking of this want of success, says: "There must be something that favors this relapse, either a defect in our theoretical knowledge, or a fault in our customary method of treatment."*

Can we offer any probable explanation of this want of success? Of what practical use is scientific discovery, unless it lead to improvements in our practical methods? And yet, all practical improvements must be the result of scientific discovery, must be based on correct principles, or be gained by methods purely empirical. The way has been already pointed out; the initiative has been taken. We must lay aside our hap-hazard methods of treating disease, and follow the great principles already laid down as landmarks to guide us in our investigations. "Step by step the idea of disease has been separated from the mere personal and ontological character that has descended with it from the remotest antiquity. . . . . What we call disease is only an abstraction, an idea, since there is no such thing in nature, possessing a separate existence."†

*"Es muss hier irgend etwas sein, was diese Rückfalle begünstigt, entweder ein Mangel in unserer theoretischen Kenntness oder ein Fehler in unserer gewöhnlichen Behandlungsweise:"—A Lücke. "Ueber den angeborenen Klumpfuss." Sammlung Klinischer Vorträge, von R. Volkmann, No. 16, Leipzig, 1871.

†"Mehr und mehr hat sich der Begriff der Krankheit von dem persönlichen und ontologischen Character, welcher ihm aus mythischen Zeiten geblieben, geläutert. . . . Was wir Krankheit nennen, ist nur eine Abstraction, ein Begriff, *ohne dass in der Natur selbst eine solche Sonderung bestände!*"—Virchow's specielle Pathologie und Therapie. Band, I.

But, there has always been a class of men who have seemed to desire only to seize upon new ideas, new discoveries and inventions, and, as far as possible, appropriate them to their own use. They are firm believers in the maxim, "*Audaces fortuna juvat.*" They know that a confident tone and a bold assertion, contribute much to popularity—and with them, popularity is success. An eminent writer has said: "Cinq ou six hommes ont pensé, et créé des idées, et le reste du monde a travaille sur ces idées." Which may be rendered: Five or six men have reflected and originated ideas, and the rest of the world has labored to understand these ideas. This is literally true; the educated world, the enlightened world, the scientific world, is busy thinking over the thoughts of other men, some of which may have been abandoned long ago; they examine them carefully, turn them from side to side, pass them from one hand into the other, until they become so familiar with them, that each considers them the production of his own fertile genius, and forgets that they ever had a place in other men's minds. We do not say that this is a fault peculiar to the medical profession—we find it in every department of knowledge, justifying the censure: "Magis magnos professores non sunt magis magnos sapientes."*

Full of expectation, we turn with no little interest to the volume of Prof. Sayre. This is the most bulky and ambitious of all the works that have heretofore issued from the American press, on the subject of Deformities. The author has been for years occupied with the subject on which he writes; he has given it a large share of attention, he has discussed it in print, as well as in the lecture-room; his operations have been numerous and many of them very successful; he evidently brings to his subject an unusual amount of mechanical skill; he is fully impressed with its dignity and importance, and is actuated by a boundless enthusiasm; he also possesses a firm belief that "Non de minimis agitur; ade ad practorem." As a teacher he speaks with a good deal of fluency, and expresses himself with sufficient precision to place his thoughts clearly and distinctly before his class. He has sufficient force of character to bring his individuality distinctly forward, so that it is felt in all that he says and in all that he does; there is a certain suavity of manner about him, a good deal of the *bon vivant*, which makes him popular and secures for him many friends. When the author attacks what he deems errors, whether popular or professional, he is as terse and decisive in expression as he is prompt and fearless in his operations. He deals with some fashionable customs, as the habit of using poisonous cosmetics, with a vigor that entitles him to the respect and gratitude of every one that hates knavery and deceit. He says: "Another cause of acquired deformity is the slow poisoning of the system by certain metallic poisons. Chief among these are the salts of lead, and one of the most characteristic deformities, produced in consequence of poisoning by these salts, is what is commonly known as 'wrist-drop,' caused by the use of Laird's 'Bloom of Youth,' and other villainous cosmetics." After giving, in his last lecture, a detailed account of the method of treatment employed in some of his cases, he continues: "The use of cosmetics has

*Le Sage. "Le Diable Boiteaux."

within a few years become so very common, even among the better class of society, and as most, if not all of them, are equally as dangerous to use as the particular one described in this report, I have deemed it my duty to place these cases before the profession, that, knowing their injurious effects, they may guard their patients against thus voluntarily poisoning themselves through ignorance." We will use the doctor's text for a further description of the disease: "This deformity, incompletely developed, can be seen every day upon the streets of this city, for there is many a fashionable lady who suffers from it in consequence of her own folly. Their (her?) hands are held in a peculiar, yet fashionable position, a sort of kangaroo style, and many of them fancy that they are imitating the fashion admirably, while they are simply obliged to carry their hands in this position because the extensor muscles are not strong enough to hold them up. The polish they put on their faces has manifested itself in producing partial paralysis of the extensor muscles of the fore-arm, and the fashion has been introduced to accommodate the deformity."

He thus speaks of another form of what we may call fashionable disease: "The accident may occur in descending stairs or steep declivities while wearing high-heeled shoes, which throw the weight of the body upon the front part of the foot, and the extra effort made for the purpose of retaining the body within the centre of gravity produces a direct strain upon these tendons, causing rupture or stretching of the anular ligament sufficient to allow them to be displaced."

It is no wonder, then, that fashionable women waddle in a most ungraceful manner when they attempt to walk. They destroy their comfort to follow a ridiculous fashion, and acquire an ambling and undignified movement. People do things to follow fashion that their good sense would cause them to be ashamed of under any other circumstances. Ladies wearing such shoes are often obliged, for safety, to go down-stairs backwards; and our author says that they can be seen "every day descending the stoops of our fashionable residences in this manner, making pretense of talking to some imaginary person in the front door as an excuse to hide their awkward movements." (Page 148).

Very little has been said on the use of electricity, in the treatment of deformities. We have seen very remarkable and very satisfactory results obtained from the application of the induced current, in the case of a patient bed-ridden for nearly two years from lateral curvature. In such cases, the vertebræ are covered only with integument. In the course of a few months' treatment it will generally require careful manipulation to count the spinous processes; the back becomes comparatively strong, and the patient is at length enabled to attend to his usual avocations. The rules for the application of electricity and galvanism are concise and practical. "Do not apply it *too long*." "Do not apply it too strong." The directions given for the employment of gymnastics will serve to explain the reasons for the above cautions. "These gymnastics are of great service in the treatment of deformities, but they must be used with much caution, and under wise supervision. The muscles should be made to perform an exceedingly small amount of labor at first, lest over-fatigue be produced. It must be constantly kept in mind that in all these

deformed members there are feebleness of circulation and impoverished muscular fibre, especially in the paralytic varieties. Consequently a very small amount of movement may, sometimes, be very severe work for such muscles." (Page 45).

For the constitutional treatment of such cases plenty of fresh air, an abundance of nourishing and easily digestible food is recommended. Our author insists that the treatment of congenital club-foot should be commenced the instant the child is born. It should certainly be commenced as soon as practicable, for every anatomist knows that when the foot is thus distorted the rudimentary bones or cartilages are thrown into unnatural relations. The pressure, which is thus placed where there should be none, prevents them from growing in the proper directions, perhaps destroys the natural angles, and forces others where there should be none. The bones are becoming harder as they grow in size, and if, at the end of some years, the surgeon is called upon to remedy the deformity and divides the tendons, or applies such mechanical contrivances as will restore the foot to its natural shape, the bones no longer fit upon one another; the angular part of one is made to rest against the angular part of another; they are constantly gliding from the position he wishes them to keep, and no amount of skill can, under the circumstances, contrive the means to keep—or, rather, to force—a natural relation between parts that have lost their natural shape. Besides, the bones have now become hardened, they change their shape much more slowly, and, if they are very much distorted or have attained nearly their natural size, they can never be fully restored.

For these reasons the advice given to parents and friends to apply promptly for advice to a competent surgeon, in all such cases, is opportune, and, as nearly all such cases are curable, those who neglect the advice have themselves to blame if their children suffer in later years through their neglect.

With such qualifications as we have alluded to, and urged by medical gentlemen of the highest standing, it cannot be surprising that we should anticipate a work of unusual merit from the author, and one that would do honor to his country and to his professional brethren; and, in undertaking the work under such circumstances, he leaves himself open to sharp criticism if he does not meet their reasonable expectations.

In his preface he informs us that: "For some years past I have been in the frequent receipt of letters from medical gentlemen of the highest standing in different sections of our country, as well as from many abroad, urging me to prepare a work on Orthopedic Surgery and Diseases of the Joints, setting forth my peculiar views of their pathology and method of treatment." This is an inducement sufficient to call out all a writer's ability, and stimulate him even to the point of enthusiasm. But, with a very commendable prudence, he tells us that, as many of his views were so directly at variance with the standard authorities, he hesitated to write until a larger experience should confirm his observations, or prove them to be erroneous. In the latter case, of course, he should have no occasion for publishing. The author, then, claims that *many* of his views are *directly at variance* with the *standard authorities;* and of the importance of these

views we may judge from the fact that he hesitated to publish them, notwithstanding the urgent demands of his friends, until experience had fully confirmed them. It must have been as gratifying to himself as satisfactory to the friends who called for his views, to learn that, "a more extended experience has confirmed my original views." It seems a little unfortunate, then, that, although these peculiar views were maturing day by day under his hand, were progressively gaining in weight and importance by constantly repeated experience, that constant professional occupation should prevent him from complying with the request of his friends. He evidently regrets this unfavorable circumstance, and he, no doubt, feels the obligation that the actual undertaking of the work at the solicitation of medical gentlemen of the highest standing has placed upon him to produce something that will be worthy of their acceptance and worthy of himself, and of the high position he occupies among the faculty of a medical school claiming rank among the first in the country; for he says: "Upon its perusal in the proof, I find many expressions which I would like to change." It is to be regretted that he did not find it convenient to change these expressions; but his reasons for not having done so are among the most curious things in the book. He says: "As these lectures were delivered extemporaneously, and without preparation (many of them being clinical, and upon cases just presented to me for the first time in the lecture-room), I find it difficult to alter the text without destroying its originality." Strange as it may seem, the learned professor, who has for so long a time been accustomed to make the "crooked ways straight" in the human subject, cannot alter the text of his own book without *destroying* its *originality.*

About two months before the author penned this preface, Billroth wrote the preface to his work on "Teaching and Studying Medical Sciences," in which he says: "I am the better prepared to expect sharp criticism, since I write for readers, many of whom are themselves not unaccustomed to handle the pen, and who will not find much difficulty in detecting the defects of my work."*

Certainly Dr. Sayre entertains no very high opinion of the intelligence and culture of his friends and the profession generally, or he has an unaccountable objection to destroying the *originality* of his text. He makes no claims, he says, to literary elegance—an admission which is very candid on his part; and we have no doubt that his claim of great originality will be equally well founded. He might have said, in the words of Montaigne: "C'est icy un livre de bonne foy, lecteur, ie veulx qu'on m'y voye en ma façon simple, naturelle, et ordinaire, sans estude et artifice."

Heretofore we have labored under the conviction that the "honorable physician," the true surgeon, must be a man of great knowledge and experience, be distinguished for quick insight into the nature of

*"Ich bin um so mehr auf eine besonders scharfe Kritik gefast, als ich, für Leser geschrieben habe, welche selbst die Feder zu führen wissen, und denen es leicht fallen wird, die Mängel meiner Arbeit zu finden."—Ueber das Lehren und Lernen der Medicinischen Wissenschaften, an den Universitäten der Deutschen Nation, nebst allgemeinen Bemerkungen über Universitäten. Eine Culturhistorische Studie, von Dr. Th. Billroth. Wien, 1876.

the deformity, and possess a correct judgment, to enable him to apply the proper remedy; that, in fact, he must be informed "*De omni re scibile et de quibusdam aliis.*" But we have been in error. Our author tells us that: "Pretenders and quacks invariably publish accounts of their wonderful cures, and the miracles they have performed," etc. "And this, gentlemen," he says, "constitutes one of the essential differences between the honorable physician and the quack."

Historical.—In the beginning of his second lecture, Professor Sayre tells us that: "Deformities of the spine are mainly *curvatures*, and of these we have two—the angular and lateral, or rotary lateral."

It is probable that the learned professor means the angular and *the* lateral, or rotary lateral. Mathematicians have described spherical angles very minutely, but we have never met with any description of an *angular curvature*. In the next sentence he says: "Certain deformities are embraced in the general term *hip-disease*, and when this general term is used, the mind at once pictures to itself the characteristic deformity attending that disease." We confess our inability to understand why the mind must at once picture to itself the characteristic deformity, when the general term is used, because certain deformities are embraced in the general term, *hip-disease*.

In the beginning of his nineteenth lecture he informs us that: "The head of the femur, which fits into and articulates with the acetabulum, is nearly two-thirds of the segment of a sphere." By what rule could we find the dimensions of this *spherical segment?*

The "constant professional occupation" that prevented the author from writing such a work as he desired, doubtless hindered him from verifying all of the statements and quotations. On the third page he states that Andry adopted the comprehensive appellation *orthopedy*, from *orthos*, straight, and *paideuo*, I educate. Again on the seventh page we are informed of the same fact, that "The etymological composition of the technical term is evidently derived from *orthos*, straight, and *paideuo*, I educate; as such we shall adopt it and use it, thinking that to relieve deformities is to educate them straight." The Professor claims to have had great success as an educator of deformities; but, unfortunately for his etymology, Andry, himself, tells us that the term Orthopœdy is derived from *orthos*, straight—erect, and *paidion*, a child. "From these two words I compose the term ORTHOPŒDY, to express in one word the design I propose, of inculcating the means of preventing and of correcting, in children, the deformities of the body."*

On the forty-eighth page we read that: "It (the foot) is connected with the leg at the astragalo-tibial articulation, and prevented from *any lateral* movement by the projecting malleoli on either side, which fit so closely to the sides of the astragalus as to permit of no motion at this joint, except that of flexion and extension, or the pointing of the toes up or down." On this point he is at issue with Professor Gross, who says: "I shall still continue to make *lateral* motion at my

*"L'Orthopédie ou l'Art de Prévenir et de Corriger dans les Enfans, les Difformités du Corps," par M. Andry, Canseiller du Roy, etc.; tome i, p. 2, Préface. Paris, 1741.

ankle-joint, without rotating my hip or revolving the head of my fibula."*

After detailing numerous dissections made to prove the immobility of this joint in a lateral direction, he continues: "I therefore feel perfectly justified in asserting, most positively, the correctness of my first statement—that there is no lateral motion at the astragalo-tibial articulation." Whoever studies this question on the living subject, will hardly fail to agree with Prof. Gross. The astragalus is narrower at its superior surface than at its base, the articulating facettes of the malleoli incline downwards and outwards, so that, if the joint is supplied with the normal quantity of synovial fluid, and the ligaments possess the usual amount of elasticity, it would be impossible to prevent some degree of lateral motion. Malgaigne denied the existence of lateral motion in this articulation, but it will be remembered that during his time, some anatomists asserted that all lateral movements were made at this joint. On this point Richet says: "Doubtless Malgaigne was right, if he intended to refute the errors of those who pretended that in this joint all the movements by which the sides of the foot were alternately raised and depressed took place; but he was wrong if he intended to deny absolutely the existence of any lateral movement."†

Brodhurst, in his work on the deformities of the human body, informs us that: "Delpech, in 1816, next divided the Achilles tendon; and he divided it subcutaneously." The description of the manner of union of the tendons given by Delpech is very accurate, and the rules laid down for their section are so clear and accurate that Brodhurst says of them: "They may be said still to be recognized as the rules for the subcutaneous division of tendons." Delpech says:

"1st. The tendon to be divided should not be exposed; but its *section* should be made by *inserting the knife at a distance* from the tendon, and *not* by making an incision in the *skin parallel* to it. There is danger of exfoliation of the tendon unless this precaution is taken.

"2d. Immediately after division of the tendon, the divided extremities of the tendon should be brought into contact, and so be held by a suitable apparatus until reunion is accomplished.

"3d. As reunion can only take place by an intermediate fibrous substance (*organisation inodulaire*), gradual and careful extension should be made, to give the required length to the shortened muscles before solidification takes place.

"4th. Extension being complete, the limb should be fixed in this position, and be so retained until the new substance has acquired that firmness of which it is susceptible."‡

---

*(*Apud* Sayre, page 48, note.)

†"L'articulation tibio-tarsienne est un ginglyme aussi parfait que possible, au dire de M. Malgaigne en ce sens, que les mouvements de flexion et d'extension seuls y sont permis et que tout mouvement de lateralité y est interdit. Sans doute M. Malgaigne a raison s'il entend réfuter l'erreur de ceux qui prétendent que dans cette jointure se passent les mouvements par suite desquels les bords du pied se relèvent et s'abaissent alternativement, mais il a tort s'il entend nier absolument par là tout mouvement de latéralité. 'Traité pratique d'Anatomie Medico-Chirurgicale,' par M. A. Richet, professeur agrégé à la faculté de médecine de Paris," etc., p. 990. Paris, 1857.

‡ Delpech, "De l'Orthomorphie," tome II., p. 330, 1828.

Brodhurst remarks: "The author of these rules may well be said to be the *originator* of subcutaneous tenotomy."

Professor Sayre tells us that: "Michælis and Sartorious also divided contracted tendons. Dupuytren and Delpech *also investigated* and *labored in the same direction*, without, however, accomplishing all they desired. Stromeyer, in 1830, first performed *subcutaneous tenotomy* for the relief of club-foot, and established it as a principle in operative surgery." (P. 3.) Delpech divided the tendo Achilles, subcutaneously, in 1816, and published his book, De l'Orthomorphie, in 1828. Stromeyer first divided tendons subcutaneously in 1830, and published his "Bertrāge zur operativen Orthopädik" in 1838, ten years after the appearance of Delpech's work.

———o———

Longevity of Invalids.—From statistics gathered by medical men, it would seem that the homely old adage, "always sick, never die," has a better foundation than mere hearsay. Dr. R. Southey, in a recent lecture on health, said:

"Health and longevity are not synonymous; neither are health and great muscularity. The most muscular men, great prize-fighters, men who could fell an ox with their fists, have been known to be always ailing and complaining about themselves. The state of perfect training, regarded by those who know little of it as a condition of most perfect health, is rather one of morbid imminence. Longevity, like height, is a race attribute, but it does not signify health. The three oldest people I ever knew—women who reached respectively 89, 98, and 100—were valetudinarians, and had been so nearly all their lives."

From the experience of life canvassers, it appears that a large number of the persons solicited, who are willing, and might otherwise have been acceptable, either decline, or are refused, because they cannot favorably answer some question in the application relating to their bodily health; which the medical examiners do not feel themselves authorized to pass or overlook, although the affliction, if it be one, does not ordinarily or necessarily tend to the shortening of life. Many of this class would gladly pay a fair additional rate, and would doubtless, in many cases of selected persons, prove profitable to companies willing to underwrite them, for the soundness of any life is only in degree; a really sound life, entirely free from any seeds of disease, hereditary or acquired, is a *rara avis* in life insurance.

Insurance of "impaired lives" is not a new thing; it has been tried in England and in this country, and with the experience thus far, bids fair to be a success.—*Insurance Monitor.*

LIFE INSURANCE COMPANIES.

A RECORD OF LOSS DISBURSEMENTS BY THE COMPANIES BELONGING TO THE CHAMBER OF LIFE INSURANCE,

Showing the aggregate monthly payments of policy claims by Companies belonging to the Chamber of Life Insurance, beginning April, 1874:

MONTH.	No. of Co's.	Death Claims.	Endowment Claims.	Total.
April, 1874	26	$1,475,377.88	$55,168.13	$1,530,546.01
May, 1874	26	1,572,414.16	57,766.89	1,630,181.05
June, 1874	26	1,433,982.95	53,687.79	1,487,670.74
July, 1874	26	1,440,810.58	61,037.26	1,501,847.84
August, 1874	26	1,280,112.23	102,533.14	1,382,645.37
September, 1874	27	1,411,280.54	123,428.07	1,534,708.61
October, 1874	29	1,383,715.91	67,962.22	1,451,678.13
November, 1874	29	1,388,821.37	72,955.55	1,461,776.92
December, 1874	29	1,455,796.50	138,719.88	1,594,516.38
January, 1875	29	1,540,374.17	157,337.87	1,697,712.04
February, 1875	28	1,449,016.97	84,032.27	1,533,049.24
March, 1875	28	1,736,496.03	119,793.72	1,856,289.75
April, 1875	28	1,746,847.05	82,272.28	1,829,119.33
May, 1875	27	1,760,508.50	95,450.71	1,855,959.21
June, 1875	27	1,815,900.21	111,576.68	1,927,476.89
July, 1875	27	1,633,134.38	114,140.45	1,747,274.83
August, 1875	27	1,691,067.20	129,009.54	1,820,076.74
September, 1875	27	1,602,158.70	157,673.36	1,759,832.06
October, 1875	27	1,401,150.56	220,064.39	1,621,214.95
November, 1875	27	1,489,134.52	155,842.55	1,644,977.07
December, 1875	27	1,496,311.25	221,148.66	1,717,459.91
January, 1876	26	1,473,563.70	186,197.51	1,659,761.21
February, 1876	27	1,535,607.35	286,797.40	1,822,404.75
March, 1876	27	1,449,369.25	201,176.99	1,650,546.24
April, 1876	27	1,508,463.15	150,204.10	1,658,667.25
May, 1876	27	1,606,974.86	221,318.85	1,828,293.71
June, 1876	27	1,678,396.39	244,999.73	1,923,396.12
July, 1876	27	1,438,780.51	211,689.80	1,650,470.31
August, 1876	27	1,520,828.83	237,618.06	1,758,446.89
September, 1876	27	1,566,804.68	182,994.82	1,749,799.50
October, 1876	26	1,440,134.45	248,798.40	1,688,932.85
November, 1876	26	1,482,055.14	226,675.36	1,708,690.50
Total, 32 months		$48,905,389.97	4,780,032.43	53,685,422.40

The above table represents the so-called "losses" paid by twenty-six of the Life Insurance Companies of the United States during the last thirty-two months. These are the companies associated in the "Chamber of Life Insurance," and they transact more than two-thirds of all the business of this class done in the United States. The table calls attention to the actual work done by these companies, in pursuance of the object for which they were founded, a feature too apt to be lost sight of in these times, when, to judge from newspaper reports, trials in the courts, and even legislative discussions, many people, otherwise intelligent, seem to regard such associations as contrivances for depriving the public of money, or for affording speculators and black-mailers rich chances of plunder.

It will be seen that these companies are actually and quietly disbursing large sums of money day by day; that these sums are paid out precisely when and where they are likely to be most needed, and

to do the best service to the community—namely, to the families of men who, while prudent enough to have provided against death, have been prematurely taken away from those they labored to support; that the relief of such dependents from distress, and the education of orphaned children into useful citizens, to the number of many thousands, are secured yearly by these funds. In fact, about six hundred of such families are thus relieved every month; and a good education is given to about one hundred and fifty thousand children each five years, who would, perhaps, have been lost to society through ignorance, if not through vice, but for this system. It is needless to enlarge upon the cultivation of economy and providence, and the encouragement of industry, among the living, by a practice which originates in self-denial and foresight, and which brings with it a sense of safety against the form of calamity which, in the vicissitudes of human affairs, may befall any man. These facts command attention and respect. In view of them, the makers of laws and the moulders of public opinion may hesitate long before they lay violent hands on the institution of Life Insurance. To overthrow public confidence in it; to impose upon it heavy burdens of taxation or rude legal restrictions; to obstruct or embarrass its operations, would be to assume responsibility for consequences too appalling to contemplate.

The subject is one which touches at many points the field of discussion to which the pages of THE SANITARIAN are devoted. We propose, therefore, to follow it up hereafter with such intelligence as we can bring to bear upon it, and to give to our readers a clear understanding of the relations of these great and useful corporations to sanitary science in all its branches. In doing this, we shall not shrink from the most trenchant criticism of anything in the conduct of Life Insurance, as actually seen, which is unworthy of its beneficent objects; nor, on the other hand, shall we lose sight of the substantial value of it as an existing institution, or of the service it does to the community. We shall also welcome to these pages the intelligent and independent discussion of the subject by others; only refusing in advance to publish either "puffs" of particular companies and plans, or malicious attacks upon them.

———o———

THE MORTALITY OF ASSURED LIVES IN ENGLAND.

As assured lives are selected lives, and moreover belong for the most part to a class of society that lives under sanitary conditions far more favorable than the average sanitary condition of the English nation, it appears natural to expect that the rate of mortality of assured lives would contrast favorably with the average death-rate in the English population. The experiences of assurance offices, however, show that although during the first year or two of assurance the assured lives exhibit the effect of selection in a low rate of mortality, their mortality in after years increases rapidly, and even exceeds the average rates in the general population. A very interesting paper on the "Mortality of Assured Lives" was shortly since read before the Institute of Actuaries, by Mr. George King, a Fellow of that Institute, in which this subject of the high rate of mortality among assured lives was carefully discussed, and considerable light thrown upon its causes. It has been pointed out before, that although the mortality of assured lives is low during the first year or

two of assurance, it then seriously increases up to a maximum, and afterwards declines as the period of assurance is prolonged. After the first year or two, however, the rate of mortality of assured lives never again falls to the average rate which prevails in a healthy population. In Mr. King's paper these facts are not only clearly substantiated, and illustrated by several well arranged tables of somewhat novel construction, but the causes of the high death-rate of assured lives, if not explained, are at any rate elucidated. There appears to be no reason to doubt that the main cause of this unexpected result is due to the option of selection which the policy-holder has the power to exercise against the company, which more than counterbalances, not only the effect of the selection of the company by rejecting bad lives, and even the members of unhealthy families, but also the advantages of good social and sanitary condition enjoyed by most assured lives.

The large proportion of discontinued or surrendered policies, it is urged, cause this "selection against the companies"; and it may naturally be inferred that it is almost invariably the best lives that discontinue their policies, whereas no one in failing health would be likely to surrender. The proportion of discontinuance is highest in the second year of assurance, and afterwards declines steadily; indeed, the rate decreases, "not only with the duration of the policy, but also with the age at which the policy was effected." A larger proportion of policies taken out on young lives are surrendered than of policies effected on lives more advanced in years. In the second year of assurance no less than 7 per cent. of policies in force are surrendered, whereas the proportion afterwards declines steadily to less than 1 per cent. after the fifteenth year of assurance. Mr. King gives a table in his paper, showing the rate of mortality in each year of assurance up to ten, and afterwards in quinquennial periods to thirty years and upwards. These death-rates are compared with rates, at the same ages or groups of ages, calculated from the Healthy English life-table as a standard. In the first year of assurance, when the influence of the selection of good lives in favor of the companies is strongest, the death-rate among assured lives is less than half the standard rate: in the second year it is 25 and in the third 5 per cent. below the healthy life-table rates. In the fourth year the rate among assured lives exceeds the standard rate by 8 per cent., and this excess increases pretty steadily up to 27 per cent. between the fifteenth and twentieth years of assurance. It is clear that the large proportion of discontinuances in the first and second years of assurance are not so detrimental to the interests of the offices as they would be later on, when the effect of the initial medical examination has in great measure disappeared. There is no reason, however, to doubt that the continued selection of the policy-holder, as against the company, which may be exercised by surrendering the policy, accounts for a part if not all of the excessive rate of mortality among assured lives. Mr. King promises a continuation of his paper, and the subject is one so full of statistical and insurance interest, that we shall be glad to see the second portion of his laborious investigation. In the mean time it is suggested to assurance companies that it would be a better policy to "give moderate surrender values early, and allow those who mean to leave to go at once, and not keep them on for some years till a sudden efflux has more power for mischief.—*The Sanitary Record.*

Editor's Table.

The Public Health.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,069,068—4 wks. end'g Dec. 23.	767	1433	22.29	83	3	111	74	3	52	21	19	1	21	43	306	330
Philadelphia, 825,500—4 wks. end'g Dec. 30.	350	1242	19.55	32	28	68	16		31	3	101	1	5	14	223	135
Brooklyn,* 506,000—4 wks. end'g Dec. 30..	341	1063	27.3	305		64	44	1	35	11	4		13	6	125	102
St. Louis, 498,000—4 wks. end'g Dec. 30...	139	391	10.24	20	1	28			5	4	4			4	65	99
Chicago, 420,000—4 wks. end'g Dec. 30.. ..	347	658	20.36	17		37	119	1	31	1	10		9	5	48	75
Baltimore, 350,000—4 wks. end'g Dec. 30...	234	552	20.5	16		20	83	8	10	2	8		4	4	97	55
Boston, 352,000—4 wks. end'g Dec. 30.....	223	598	22.08	25	1	49	46		17	12	6		3	4	106	69
Cincinnati, 265,000—4 weeks end'g Dec. 30.	83	312	15.3	15	9	9	1		3		26			3	51	63
San Francisco, 275,000—month of Nov.....	177	542	24.01	51	22	80	4	2	19	6	22		3	14	53	41
New Orleans, 210,000.....																
Washington, 160,000.....																
Pittsburgh, 142,000—month of Dec..	92	202	18.5	13	9	8	5	7	8	4	4		1	4	18	30
Newark, 126,000—month of Dec.....	113	261	24.85	5		27	8		7		6		1	5	36	29
Providence, 101,500—month of Dec	62	166	19.6	4		14	1		16		2				25	36
" Year 1876.....	726	1862	18.3	61		111	35		65	35	33		22	188	283	215
Milwaukee, 100,781—month of Dec.....	122	195	23.21	5	38	5	30		1	1	4	1	1	3	8	14
Rochester, 70,000—month of Oct.....	47	130	22.28	1		18			6		5		1	7	17	15
Richmond, 72,500—4 wks. end'g Dec. 30...	49	117	20.97	6		4	2		2	3	1			2	16	14
New Haven, 60,000—month of Dec.... ..	16	97	19.4	4		9	13		2						8	8
Charleston, 57,000—7 wks. end'g Dec. 30...	70	200	26.03	6		13			3		5		1	1	24	22
Toledo, 50,000.....																
Mobile, 40,000—month of Nov.....	27	85	25.5	7		1			1		1				15	8
Dayton, 36,000—month of Dec.....	22	43	14.33	1		5	1		3						7	9
Nashville, 27,000—month of Dec.....	40	85	34.07			26		1	1					2	5	6
Wheeling, 28,000—month of Dec	14	36	15.42	1			6				4		1		1	5
Buffalo, 170,000—month of Dec.....	36	149	9.76	4		1			1	1	5		2	1	24	15
Knoxville, 13,000—month of Dec.....	2	17	15.69	2							1				2	1
Paterson, 39,000.....																
Petersburg, 20,000—4 wks. end'g Dec. 23..	11	35	22.75	4					1						10	4
Lansing, 8,400.....																
Selma, 8,000—month of Dec.....		18	22.			1									4	2
Elmira, 20,000.....																
Hudson Co., N. J., 170,859.....																
Yonkers, 17,500—month of Dec.....	11	34	23.31	2			3				2				4	8
Memphis, 45,000—month of Dec.....		102	20.72	1			12			1	2			9	11	22
Reading, 40,109—Year 1876.....		1118	27.95		100											

* 305 deaths by Violence. 284 by the burning of the Brooklyn Theatre.

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during four weeks ending December 2d, 22,714 births and 15,296 deaths were registered in London and twenty other large towns, and the natural increase of the population was 7,418. The mortality from all causes was, per 1,000—in London, 24.25; Edinburgh, 18.75; Glasgow, 25.25; Dublin, 26; Portsmouth, 23; Norwich, 19; Wolverhampton, 26.75; Sunderland, 25; Sheffield, 25.75; Birmingham, 22.25; Bristol, 21.25; Liverpool, 27.25; Salford, 38.75; Oldham, 32.50; Bradford, 27; Leeds, 23.75; Hull, 23.25; Newcastle-upon-Tyne, 20.25; Leicester, 24.75; Manchester, 28.50; Nottingham, 21. Other foreign

cities at most recent dates per 1,000: Paris, 29; Rome, 29; Vienna, 26; Brussels, 21; Berlin, 25; Hamburg, 23; Calcutta, 27; Bombay, 23; Madras, 40; Amsterdam, 28; Rotterdam, 28; The Hague, 29; Christiana, 22; Breslau, 28; Buda-Pesth, 38; Turin, 24; Alexandria, 47; Copenhagen, 23; Munich, 34; Naples, 30.

New York.—During the year 1876, 23,744 births, 7,099 marriages, 2,290 still-births, and 29,211 deaths were reported to have occurred in this city; of this mortality 15,239, or 52.17 per cent., were in tenement-houses (houses containing 4 families and more), 8,207, or 28.10 per cent., in houses containing 3 families and less (including shanties), 247, or 0.85 per cent., in hotels and boarding-houses, 4,768, or 16.33 per cent., in institutions, 270, or 0.93 per cent., not stated, and 480, or 1.64 per cent., in streets, rivers, yards, etc. The floors upon which these deaths in tenement-houses, houses containing 3 families and less, and hotels and boarding-houses occurred, are as follows, viz.: Basement, 244; first, 6,173; second, 8,378; third, 4,630; fourth, 1,502; fifth, 282; sixth, 42; seventh, 3; on the floor designated as the top, 1,267; and the number of houses that had no floors stated was 1,360. The certificates of death which do not contain the number of families and floors stated thereon were received in the early part of the year, when the present system was not so complete as it is now.

The highest monthly number of deaths reported was in July, 4,172, March and August following next in numerical order, with 2,763 and 2,732, respectively; the highest weekly number of deaths was during the week ending July 15, when 1,298 deaths were reported, which is within 506 of the total mortality reported for the month of November (1,804), which had the lowest monthly number of deaths reported during the year; the lowest weekly mortality was during the weeks ending November 11 and 25, which had 413 deaths each, or 885 less than the mortality reported during the week ending July 15. The highest monthly number of deaths reported in tenement-houses was during the month of July (2,410), and the lowest was during the month of November (886).

The number of deaths reported during the year 1876 from diphtheria was 1,764; scarlatina, 889; membranous croup, 524; malarial fevers, 243; and cerebro-spinal fever, 125. 1,230 of these deaths were in houses containing 3 families and less (including shanties), 2,169 in tenement-houses, 70 in hotels and boarding-houses, 69 in institutions, and 7 on canal boats. Of these deaths, 43 were on the basement floor, 189 on the top, 846 on the first, 1,208 on the second, 709 on the third, 281 on the fourth, and 69 on the fifth. The average age of those who died from scarlatina was 4 years, 2 months, 14 days; of diphtheria, 4 years, 2 months, 11 days; of membranous croup, 2 years, 7 months, 7 days; malarial fevers, 25 years, 3 days; and cerebro-spinal fever, 10 years, 1 month, 7 days. The wards that furnished the highest number of these deaths were, the Nineteenth, 409; Twenty-second, 374; Seventeenth, 309; Twentieth, 268; and Twelfth, 232; the wards that furnished the lowest number were, the Second, 2; Third, 12; First, 41; Fifth, 51; and the Fifteenth, 59.

The burial of 25,631, or 81.05 per cent., of the deaths and still-births reported during the year, was in the following six cemeteries, viz.: Calvary, 11,941; Lutheran, 4,387; City (pauper burial ground), 3,816; Greenwood, 2,541; Evergreen, 1,672; Cypress Hills, 1,274.

The actual mortality by months, for the year 1876, from the principal causes, will probably be ready for the next weekly meeting of the Board; the reported mortality refers only to the number of certificates of death received during the year.

JOHN T. NAGLE, M.D.,
Jan. 2, 1876. Dep. Reg. of Records.

Lactometer Milk.—The closing event of sanitary work in New York, for the year 1876, was the establishment of the lactometer test of milk. Hence-

forth, according to the decision of the Court of General Sessions, Judge Sutherland presiding, the test for water only is deemed to be sufficient.

Numerous milk and water dealers having been arraigned, they determined to make the lactometer a scapegoat for themselves, because, forsooth, it failed to show that water was the only fraud which they imposed upon the public. They virtually admitted, indeed several of them actually pleaded guilty to the charge of selling *water* colored with milk, but, like Jemmie Twitcher, when he was detected in the act of stealing eggs, "they were not ducks' eggs," and therefore punishment should not be awarded.

The issue was made by the German Milk Dealers' Association, and one Schrumpf was put on trial as a test case. At no time in the trial was the guilt of the prisoner in doubt, for the milk dealt in was watered to the extent of about one-fifth; but his special offense was almost lost sight of, in the fight between the indicted dealers as a body, and the Board of Health.

Professor Chandler, President of the Board of Health, gave most unequivocal testimony to the value of the lactometer in conjunction with the thermometer and the use of the senses, in determining the extensive watering of milk; milk could be distinguished from cream and from skim milk, and watered milk or otherwise adulterated milk, by using this test; he had conducted numerous experiments in relation to the standard of milk that had been adopted by the Board of Trade on farms, and he had come to the conclusion that 100 was the standard that should be registered by the lactometer; out of 505 cows they found only four to go below, and these four were sick. At this stage of the proceedings the witness proceeded to test the instrument in the presence of the jury. A can of what is called commercial milk, at a temperature of 67 degrees, showed 82 degrees in the lactometer. Skim milk was then tested at a temperature of 56 degrees, and showed 114 degrees by the lactometer, and cream at a temperature of 67 degrees showed 44 degrees by the lactometer. The first specimen presented was reduced to a temperature of 59 degrees, and showed 90 degrees by the lactometer. The jury inspected the experiments. Professor Chandler was then cross-examined at considerable length. Counsel for the defense requested him to examine four different lactometers in the same liquid, and the result was as follows:—The first showed 114 degrees in skim milk, the second 116 degrees, the third 116½ degrees and the fourth 114 degrees. Counsel for the defense again endeavored to have their bottle of unknown fluid tested, but the objection on the part of the prosecution was sustained by the Court. The witness tried a lactometer introduced by the defense, and in skim milk it showed 115 degrees and in cream 48 degrees. The Professor then tested his own lactometer in cream, and it showed 45 degrees, which, however, the expert for the defense said was 47 degrees, as also did Professor Barker. Another showed 45 degrees, and another 46 degrees. In these views Professor Chandler was sustained by several professors of chemistry, health inspectors and others who had made the examination of milk a special study.

On the other hand, Professor R. Ogden Doremus, and his son, Dr. C. A. Doremus, were quite as positive, direct and experienced in examples showing that the lactometer test is not a proper indication of the value of milk, as it registers a higher quality of milk when placed in skimmed milk than when immersed in milk which was rich and creamy. That there are two substances in milk lighter than the milk itself—namely, water and cream—and it is this cream that will eventually damn the lactometer. That it is impossible to discover, with the lactometer, whether it was cream or water which lightened the milk, as it could not be done without completely analyz-

ing the fluid. This would demonstrate the falsity of the lactometer, for milk may be light owing to its goodness. Under all the circumstances, the Professor was of the opinion that the lactometer was not reliable as a test. The testimony of Dr. Doremus was very interesting, especially after recess, when he illustrated by experiment a very simple method of testing milk by means of evaporation. He showed that by previously weighing, for instance, a tablespoonful of milk, the little dish which contained it also being weighed, the loss when heated would be the water. He then explained how all the component parts could be determined, and proved that this method of testing milk was not only simple but complete. The witness cited various authorities in support of his opinion that the lactometer, as a detecter of adulteration in milk, was not reliable.

In the course of his testimony, Dr. Doremus referred to several authorities who, he said, had condemned the instrument on the ground of its unreliability. He further stated that no deduction could safely be drawn as to the adulteration of milk by water from the manner in which the milk ran from the lactometer when it was taken out. He had seen samples of milk taken from the cow which ran off from the lactometer in a manner similar to that described as characteristic of adulterated milk. Professor Doremus detailed at length the causes that might tend to vary the specific gravity of milk. Water and cream make it lighter, as already intimated, while cheese, sugar and salt reversed this condition. So far as the question of detecting adulteration was concerned, he was of opinion that the best method to determine whether milk was pure or impure was by analysis.

It was repeatedly argued by the counsel for the defense that the lactometer was not a sure guide in the detection of fraudulent milk, and that it was competent to prove that fact; hence the opinion of Dr. Doremus as an expert was extremely valuable in a case of this kind in contradistinction to the evidence of the witnesses who had testified as to its efficiency.

Judge Sutherland, however, seemed anxious to keep within the bounds of the inquiry—namely, whether the prisoner at the bar sold adulterated milk in violation of the ordinance of the Board of Health. He defined the law applying to the traffic in watered milk, but did not review the evidence.

The jury, after consulting for an hour, declared Schrumpf guilty. Judge Sutherland sentenced him to be imprisoned for ten days, and to pay a fine of $250. In lieu of paying the fine he may endure 250 days of additional imprisonment. His Honor said: "There is no evidence that you knew the milk you sold was watered, but, in view of the very great importance of this case, the sentence ought to be such as to satisfy you and your friends that you had better not come here to be tried. Unless the law as to watered milk can be enforced, I do not see how the Board of Health can protect the public. The keeping for sale of watered milk, whether known to the dealer or not, must be stopped. I suspect that you may be personally as honest as the average of men in your line of business."

By agreement between the Board of Health and the counsel for the German Milk Dealers' Association, this trial was to be a test. If the verdict was against Schrumpf, the other indicted milk dealers were to plead guilty; and if it was for him, the prosecution of the others was to be abandoned.

State Board of Health for New York.—"Several medical gentlemen of great eminence in their profession have asked my attention to the subject of a State Board of Health. They believe that such an institution would render essential service in the prevention of sickness and the preservation of life and health. They claim that in almost every

case where local epidemics have prevailed with a severity and fatality which seemed mysterious, their origin can be traced to some neglect of sanitary precautions or to some cause which a properly organized board of health would have discovered and removed. Important as the subject is, it has been impossible for me to find time for such an examination of it as would justify any specific recommendations. I can only ask your careful consideration of it. I do this the more willingly because I am assured that it is not intended that any expense shall be incurred by the State beyond a moderate salary for the secretary of the proposed board."—*Governor Robinson's Message.*

We are gratified to know that the committee appointed by the President of the American Medical Association, and the Committee on Hygiene of the State Medical Society, are in co-operation, in having called Governor Robinson's attention to this much-needed measure; and that they are engaged in the preparation of such a bill as will be likely to meet with the support of the legislature.

Small-Pox. — The appearance of small-pox in many places in Wisconsin, and the continued spread of the disease, has called for a word of warning and advice from the State Board of Health :—

The average yearly death-rate from small-pox in Wisconsin is somewhat over one hundred, while the average number of cases annually exceeds four hundred. Already, *within the last three months*, these numbers have been exceeded, and unless vigorous measures are adopted, and great vigilance observed, it will exact a much larger tribute of human life.

The experience of Wisconsin in this respect is not exceptional. This loathsome and very fatal disease is visiting other localities to such an extent, that those who have watched its progress greatly fear a widespread epidemic.

Small-pox is pre-eminently a preventable disease. We possess the means by which we may keep it from our homes and our community. It never visits either, except as those means have been neglected.

The measures to be instituted are *vaccination and revaccination*, which will *perfectly* protect against any form of variolous disease; but to secure this protection *three* conditions must be carefully observed.

1st. The virus used must be pure and vigorous.

2d. The operation must be skillfully and properly performed.

3d. Revaccination must be frequently practiced, to test the returning susceptibility of the system to the small-pox contagion.

By a strict and universal observance of these rules, small-pox might be stamped out of existence. To neglect such rules is to endanger not only the life of him who neglects them, but also the lives of those with whom he associates.

With regard to *revaccination*, the facts are, that a certain number of persons are protected for life by one vaccination, while the protection of others extends to but a limited and variable period. Hence, as we are without the power to distinguish between these classes, revaccination is as essential as a primary operation, and should be performed at least every five years. It should also be performed at every season of an epidemic diffusion of the disease.

Should small-pox unfortunately appear in any community, *every case should be thoroughly isolated*, and kept so until all danger that the disease can be communicated is past. At the close of the disease, articles which can be so treated should be disinfected by being subjected to the action of boiling water, or be baked in an oven at a temperature of not less than 212 degrees. Heat effectually destroys the poison germ. Such articles as cannot be so treated should remain in the room and be subjected to *sulphurous fumigation*, which is effected by placing about

three pounds of sulphur in a safe and convenient vessel in the room, with the doors, windows and chimney flues closed, and ignite it. The room should remain closed ten or twelve hours.

Disinfecting Pastiles—chiefly of sulphur—are a great improvement on, and free from the inconveniences and dangers of, fire, in the ordinary use of sulphur for disinfecting purposes, under all circumstances.

Girondin Disinfectant, and **Bromo-Chloralum** are both valuable agents, *susceptible of use in the sick-room,* for the restraint of infections, and, in concentrated forms, powerful disinfectants of clothing and premises.

Warming Street Cars, which, under the ever-watchful intelligence of William Richardson, Esq., President, has been in practice on one of the lines of Brooklyn for several winters, is now attracting very general attention, and some very absurd suggestions, such as weather strips, and various other means of poisoning people by the multiplication of obstacles to the admission of fresh, and the escape of foul air. The fact is; if for no other purpose than as a means of ventilation, warming appliances of some kind should be generally introduced, and with them efficient and *always open* means of escape for foul air. For the admission of fresh air, the ordinary mode of car construction, and the necessary frequency of opening the doors, are sufficient. Mr. Richardson's plan of warming is by cylinder stoves. For the purpose of ventilation, these stoves might be greatly improved upon by providing them with *double* pipes, by incasing the smoke pipe in another pipe or flue four inches larger, riveted to the stove, and with openings in it near the stove, and also near the upper end, by which the foul air may be drawn off.

To keep the smoke pipe in place, in the centre of the ventilating flue, it should be fitted near the upper end with a circle of wire provided with three or four prongs of the right length, to scotch it. This simple and cheap contrivance is equally adaptable and useful to stove warming under all circumstances. But, as a system for car warming, however, stoves are only commendable in default of other and better means. In Mr. Richardson's cars the stove is placed on one side, in a notch taking up the space of one seat, and as well provided as possible against the inconveniences of crowding. One of the companies in Philadelphia uses a stove in the middle of the cars, which, in New York and Brooklyn, at least, would be wholly impracticable. In view of the necessities of the case, we are glad to have learned that a novel means has recently been introduced in Wheeling, which bids fair to overcome the difficulty; and we take pleasure in commending it to consideration. It is described as follows: "The apparatus occupies a space about fourteen inches square under one of the platforms, and in no way obstructs the brakes or wheels. Charcoal is used as fuel, and a three-inch pipe from the coal box up the end of the car to the roof acts as a smoke-stack. The end of the pipe is covered with a wire gauze cap, to guard against accidents from sparks. The fuel is passed through a lid, which rests level on the upper side of the platform, offering no obstruction in either getting on or off the car. The water pan is fitted with a faucet, by which the water can be drawn off when necessary. A pipe running along the floor on the inside of the car supplies the pan with water from a reservoir, and the hot water is conducted back in a large pipe, running parallel and emptying into the reservoir again. The reservoir, which will hold about eight gallons of water, runs up from the floor to the window-sill, and is fitted with an escape steam pipe and a stop-cock. The whole apparatus can be attached to a street car so that it will in no way inconvenience the passengers."

Wash-Stand and House Drain Traps.—We are sorry to see that so in-

telligent a writer as *Clarence Cook, in Scribner's for January*, advocates, "both for sanitary and æsthetic reasons," the banishment of the fixed wash-stand from our domestic life. "Leaving out of view," he remarks, "the expense of plumbing arrangements, their liability to get out of order, the frequency with which they get stopped up, the freezing in winter, and all the evils water and drain pipes are heir to, I believe it is now admitted that the drain-pipes are the source of a great deal of the disease of our cities and even of our country towns. Convinced of this, and seeing no certain way to prevent the evil so long as drain-pipes are allowed in bedrooms, many people nowadays are giving up fixed washing-stands altogether, and substituting the old-fashioned arrangement of a movable piece of furniture with movable apparatus, the water brought in pitchers, and *the slops carried bodily away in their native slop-jars.*"

The italics are ours, because we are not able to see where the "sanitary and æsthetic reasons" come in. That "many people," or any people nowadays should come to such a conclusion as that embodied in the quotation given, is, to say the least, very surprising; but that *Clarence Cook* should apparently not know that there is no excuse but ignorance for the dangers that such people encounter, is still more surprising. Recently, by the progress of sanitary science, some people have learned that many fatal diseases are caused by filth in a great variety of forms, and that one very common form is sewer gas, in default of bad plumbing. But this, bad as it is, is much less fatal than the "old-fashioned arrangements" of slop waters, privy-pits and cess-pools. The volatile effluvia from "native slop-jars," leakage and soakage, were all only so many foci of "sewer gas" poison without the sewer, which differed only in degree from that which results from the defective traps of bad plumbing. There are, indeed, we know but too well, all sorts of escape-holes for "sewer gas" from our wash-stands, bath-rooms, butler-closets, wash-tubs, sinks and cellars, due to disjointed drains, leak' pipes, choked traps, or no traps at all—all for *the want of good, workmanlike attention and intelligent supervision.* There *are* good workmen, and an abundance of good material, and traps so constructed, for both wash-stand and house drains, that will, *if properly put in*, effectually prevent the escape of sewer gas. For an intelligent description of these appliances, and where to find them, readers are referred to the **advertising pages of The Sanitarian.** The difficulty is, people too commonly have their plumbing done by the lowest bidders, by ignorant or incompetent workmen, and they reap their reward.

Jennings' Sanitary Appliances.—The merited attention which **Jennings' Water-Closet** is everywhere attracting, is our justification for answering, somewhat in detail, many inquiries in regard to it. It has been before the English public many years, and for several years used in this country; but during the while, the inventor and proprietor of it has been alive to every means of improvement. The first striking feature is an *S* trap in one piece of delf, or (for exposed situations in danger of frost) iron.

The trap is placed above the floor line, easy of access in case of stoppage, and thus obviating the necessity of cutting through the floor and joists, and taking less time to fix it in its place. The outlet is at the side and entirely removed from sight; the basin presents a uniform surface, and, as compared with other closets, of much more tidy appearance. The basin is emptied by lifting a hollow plug having a seating of India-rubber to render it water-tight. This plug also serves as an overflow to carry away any excess of water in the basin. It was at one time thought advisable by the inventor to trap this overflow, but as this was found in practical use to defeat the object of its adoption, by syphoning the lower trap, it was abandoned, and the

closet reduced to the complete and simple form in which it is now presented.

Above the trap a socket is provided for a ventilating pipe, the outlet of which should be removed as far as possible from windows; the best plan is to carry it up *independent* of the rain water guttering, and, in mansard roofs especially, to the ridge of the roof.

Mr. Jennings is also the inventor of a wash bowl known as the "Tip-up basin;" this is a clean and simple arrangement, entirely dispensing with the plug, washer and chain. Basins drained through a hole at the bottom are always more or less offensive, owing to the accumulation of dirt and soap round the sides. In some of the schools in England, it has been found that this plug arrangement was the means of spreading ophthalmia among the scholars; hence, it has been superseded in that country by the "Tip-up" basin. The arrangement consists of a wash basin hung upon pivots, which, on tipping or turning over, discharges the contents bodily into a second basin or receiver; thence through an outlet into the drain. These basins, we are informed, are used by the Queen in Buckingham Palace; the Prince of Wales at Marlborough House, and Sandringham; the Duke of Edinburgh, at Clarence House, Piccadilly, and Eastwell Park, and by almost all the nobility; and in most of the hospitals, hotels and club-houses in London and the principal cities of Europe. The retiring rooms of the Vienna and Centennial Expositions were fitted with lavatories of this system, and were much admired. These and the various other sanitary appliances exhibited by Mr. Jennings at the Centennial may be obtained at **The American Agency,** 94 Beekman St., New York.

Winter Health Resorts.

The weather in New York, at the time of this writing, is severely admonishing invalids and pleasure-seekers that now is the time to seek a more southern climate. And since many of our readers are seeking for descriptive literature of the best places to visit, and the best means of reaching them, we invite their special attention to our advertising pages; and for the southern portion of the United States, especially, to the fullest and most trustworthy book which has been written on the subject.*

The author, Mr. Sidney Lanier, is the Georgian poet, who wrote the much-criticised and warmly-admired "Centennial Meditation of Columbia," last summer. But Mr. Lanier, while his poet's eye looks with kindling enthusiasm on the rare beauties of the region he describes, does not forget the soberer duties of the statistician and the guide.

Florida's attractions are those of climate and vegetable luxuriance, of quaintness and sumptuousness. Mr. Lanier very frankly says of it, in his introduction: "In view of many absurdly hysterical utterances which have been made touching the tropical ravishments and paradisaical glories of Florida, it is proper to say at this point that the State is not remarkable for beauty of landscape; and that persons—particularly those from hill countries—who should go to Florida for this sole end, would certainly be disappointed." He tells just what Florida is, however, neither ignoring its objectionable features nor refusing to accord the highest praise to its glories and advantages. His book, therefore, is plainly just what the tourist or the settler wants to consult. The first chapters are in the form of a traveler's essays, and describe with much beauty of style the Ocklawaha River, the antiquities of St. Augustine, the Tallahassee and Gainesville regions, the Everglades and the Key West country, etc. Mr. Lanier then proceeds to describe the physical characteristics and conditions of Florida, and gives valuable meteorological tables for various parts of the State.

Charleston, Savannah, Augusta, Ga., and **Aiken, S. C.,** all favorite re-

* FLORIDA: its scenery, climate and history. By SIDNEY LANIER. Philadelphia: J. B. Lippincott & Co.

sorts, are treated of in a special chapter, and their peculiar advantages well described. A chapter is also especially addressed to invalids and consumptives.

In an appendix are presented various important statistics concerning the culture of grapes, bananas, oranges, strawberries, figs, tobacco and sugar; a general itinerary; and a brief gazeteer of towns, rivers and counties. The whole volume is just what it ought to be, and leaves nothing to be asked for.

Bermuda is also one of the most delightful of winter resorts, readily accessible from New York, in 72 hours.

The climate is mild and of unusual evenness throughout the year, the variation from January to December being rarely more than twenty degrees, and giving an average of about seventy degrees annually.

The orange and the lemon here flourish, cedar and palmetto hedge every ridge and road, and everywhere the ocean is peeping out or in broad expanse, to gladden the eye of the tourist with the delights and placidity of the scene.

Persons predisposed to pulmonary disease, and others who would enjoy the pleasures and benefits of breathing a delightfully equable and balmy atmosphere, of a temperature which admits of an outdoor life—neither too hot nor too cold—and scenery to make it attractive, should winter in Bermuda.

Nassau—as a winter home for the afflicted—presents peculiar and unsurpassable advantages. It is situated in north latitude 25° 5′, and west longitude 77° 20′—almost within the tropics, but the heat is tempered by an ocean breeze of such constancy, softness and purity as to make it exceedingly exhilarating to persons with weak lungs. Peter Henry Bruce wrote of it, nearly a century ago: "It is no wonder the sick fly hither for relief, being sure to find a cure here."

General James Watson Webb, in writing of it in 1870, says that, "from the first of November to the first of June, *there is not, in all probability, any spot on the face of the earth* so desirable for persons suffering from pulmonary complaints." And many others who have experienced its benefits, express themselves in the same vein. Here all the ordinary tropical fruits abound in great perfection, and are had for little more than the cost of the gathering. The drives are excellent, the scenery varied and beautiful, and the shores covered with marine treasures in the form of the most beautiful shells and corals.

Havana, and **San Domingo** and other more distant, and intermediate places, are also represented in our advertising pages, with the most comfortable and expeditious routes of travel, to suit the taste, conveniences and necessities of all who would escape the rigors of a northern winter.

For more elaborate information of the above-named places, and many others, both home and foreign, interested readers are referred to previous numbers of THE SANITARIAN.

Literature.

Reparative Surgery is the significant title of one of the most thoroughly scientific works on a special branch of practical surgery hitherto published.[1]

It consists of a collection of twenty-nine typical cases, which exhibit a perfection in the degree of reparation scarcely exampled in the annals of operative surgery.

Dr. Gurdon Buck, the author, has long been among the most honored of the profession in New York, for the truly scientific spirit with which he has pursued the practice of his profession; but, in the particular sphere of Reparative

[1] *Contributions to Reparative Surgery: Showing its application to the treatment of deformities, produced by destructive disease or injury; Congenital defects from arrest or excess of development; and cicatricial contractions from Burns.* BY GURDON BUCK, M.D. Illustrated by numerous engravings. 8vo, pp. 237. New York: D. Appleton & Co.

Surgery—which "largely embraces the treatment of lesions of the face, a region in which plastic surgery finds its most frequent and important application"—he has signally excelled. The twenty-nine cases given are arranged in three groups: ten illustrate the "loss of parts involving the face and resulting from destructive disease or injury"; fifteen, "congenital defects from arrest or excess of development"; and the remaining ten, "cicatricial contractions following burns." The mechanical execution of the work is admirable, in keeping with the text: white paper, large and clear type, and cuts far superior to those commonly used in medical books.

The Skin and Hair, so commonly neglected by the untidy, or abused in the toilet, continue to claim the attention of the most popular of scientific instructors for their preservation and management, Dr. Erasmus Wilson, the *eighth* edition of whose admirable work is now before us.[1] Few works have ever been received with more favor, or better deserved it. One fault only we have to find with it—its title is insufficient; for, while it is the best book we know of on the special subjects of its title, no work with which we are acquainted gives more admirable directions for the use of the *Bath;* such sensible remarks on *Soap;* so much useful information for young people, especially, about *Pimples;* such good advice to mothers about *Rashes;*—in short, it is one of the very best books we know of for the general care and preservation of personal health, its cardinal tenets being near akin to godliness.

The Electric Bath is the subject of an interesting essay, just published,[2] giving the experience of the author in the special advantages of this means of applying electricity in the treatment of disease, over the more ordinary methods. He regards water, at blood temperature, as a better conductor of electricity than the human body; hence the diffusion of the electric current through the water, and to the whole periphery of the body, intensifies and insures more certain results. Moreover, he claims its influence thus conditioned, in promoting the absorption of medicines dissolved in the water, and its power, "through chemical affinity, to facilitate the elimination from the body certain metallic substances, and to further the absorption of morbid deposits." A number of cases are related in support of the theories advanced, and a category of diseases given deemed to be especially amenable to this kind of treatment.

Coughs and Consumption interest everybody; for no matter how free from them certain individuals may be in their own persons, we doubt whether there is any one who is not more or less concerned for others, who are less fortunate. And so, too, of **Diet in Disease;** very few persons, however well they may be, have an acquaintance so limited as not to be concerned for some one or other who knows not the pleasure of a healthy digestion. A good book, therefore, on these subjects, has a wide application, and such an one is that now before us.[1] Dr. Dobell has long been known as one of the most accomplished physicians of London, where he has enjoyed large opportunities and distinguished honors; and during the while given much sound instruction by means of original experiments, lectures and essays, mostly confined to topics comprehended in the title, which is made up from a connected series of extracts from his previously published papers. The portion on Diet is an ab-

[1] *Healthy Skin: a popular treatise on the Skin and Hair, their preservation and management.* By ERASMUS WILSON, F.R.S., F.R.C.S., Professor of Dermatology in the Royal College of Surgeons of England. Eighth edition. 12mo, pp. 311. Philadelphia: Lindsay & Blakiston.

[2] *The Electric Bath: its medical uses, effects and appliances.* By GEORGE M. SCHWEIG, M. D. 12mo, pp. 134. New York: G. P. Putnam's Sons.

[1] *Coughs and Consumption, and Diet in Disease.* By Horace Dobell, M.D., F.R.M.C.S., etc., Consulting Physician to the Royal Hospital for Diseases of the Chest, London, etc., etc. 12mo, pp. 222. Philadelphia: D. S. Brinton.

stract from his larger work on "*Diet and Regimen in Sickness and Health*," which we had occasion to commend some time ago,* with only one exception; and we are more and more confirmed in the justness of that exception, that *alcohol* should be omitted from all *diet* lists. As a *medicine* we concede its value in very exceptional cases, but as a diet, never.

Our American Libraries.[1]—This is a very important and interesting report, and one which every librarian and bibliophile in the country will be grateful for. It was a part of the exhibit made by the Bureau of Education, of the Department of the Interior, at the Centennial. The work has had for editor Mr. Samuel R. Warren, who was assisted, in the latter part of his task, by Major S. N. Clark. Subsidiary work was also done by Miss Mary E. McLellan and Dr. Charles Warren, while many of the chapters are the contributions of outside specialists. The first chapter tells of the number and condition of American public libraries at the time of the Declaration of Independence, and is written by Horace E. Scudder, whose investigations into American antiquities lately gave us an admirable Sans-Souci volume of reminiscences of things a hundred years ago. An account of school and asylum libraries is contributed by the editors. The account of our college libraries is unexpectedly full and minute, covering 67 pages. This is, on the whole, the most important chapter in the report. Of kindred value is the chapter on theological libraries, of which the Roman Catholic are given a special description by Rev. Prof. John S. Sumner, S. J. Law, medical and scientific libraries are described respectively by Stephen B. Griswold, Dr. J. S. Billings and Prof. Theodore Gill. The editors then speak of prison and reformatory collections of books. There are, besides, essays, severally, by distinguished writers on library subjects of much interest, and very elaborate general tables of all the libraries in the country. It is a monument of industry, and a marvel of completeness and accuracy. It reflects the highest credit on all connected with the task of its preparation.

Transactions of the Medical and Chirurgical Faculty of Maryland[1] contains, besides the ordinary business transactions: The Degree of Certainty in Therapeutics (annual oration), by Roberts Bartholow, M.A., M.D.; Report on Surgery and Tumor of Testicle, Christopher Johnson, M.D.; Notes on the Progress of Ophthalmology, Samuel Theobald, M.D.; Supplementary Reports on Surgery, Thos. R. Brown, M.D., and A. Friedenwald, M.D.; Phthisis, Abram B. Arnold, M.D.; Obstetrics and Gynæcology, Augustus F. Erich, M.D.; Insanity in its Financial Relations to the States, J. S. Conrad, M.D.; Analysis of a Few Cases of Abdominal Disease and Treatment of Peripheral Paralysis, W. C. Van Bibber, M.D.; Thoracentesis, J. E. Gibbons, M.D.; Thirty-seven Operations of Thoracentesis by Pneumatic Aspiration, Frank Donalson, M.D.—These are all practical papers and reports, most of them the result of joint work under the general plan of the Faculty, by sections, and therefore free from the redundancy which commonly attends papers and reports which have not been subject to the pruning of concerted effort.

Water Supply and Drainage of Farm-Houses and Buildings, in their Sanitary Relations, by Prof. W. H. Brewer,[2] is an unusually valuable paper, illustrating the danger of water contamination by numerous examples, and showing how easily it may be avoided by the exercise of the most ordinary

* SANITARIAN, Vol. iv, p. 140.

[1] *Public Libraries in the United States of America*: their history, condition and management. Special report. Department of the Interior, Bureau of Education. Washington: Government Printing Office.

[1] 78th Annual Session, April, 1876. 8vo., pp. 165.

[2] From Report of the Secretary of the Connecticut Board of Agriculture, 1875.

care, when once its necessity is fully realized.

The American Naturalist for January commences the eleventh volume of this excellent popular magazine of natural history and travel, and presents, as usual, a varied and attractive table of contents. The range and variety of the subjects treated in the *Naturalist* every month are attracting well-merited attention, and doing much to promote the study of natural history in our educational institutions. It richly deserves the encouragement which we are glad to learn it is receiving by a rapidly increasing subscription list. It is now published by H. O. HOUGHTON & Co., Boston. Terms, $4.00 a year.

The Living Age for the week ending January 6th begins a new volume. This is an excellent time for the beginning of a subscription, and the publishers still present to new subscribers for 1877 the six numbers of 1876, containing the first installments of MacDonald's "Marquis of Lossie." To every one who would keep abreast of the best thought of the time, this periodical is, in fact, almost a necessity. With fifty-two numbers, of sixty-four large pages each (or more than 3,000 pages a year), the subscription price ($8) is low, while for $10.50 the publishers offer to send any one of the American $4 monthlies or weeklies with *The Living Age* for a year, both postpaid. LITTELL & GAY, Boston.

The Home Journal is admirably filled with the discussion of topics interesting in society. Hence its value to those mingling in cultivated circles.

Books Received.—Report of State Board of Health, Md.; Report of Commissioners for adjustment of the Boundary Line of Maryland and Virginia; Report of Commissioners of Fisheries, Md.; Trans. Med. Society of Ohio; Dr. J. L. Bodine—Management of the Insane; Dr. J. M. Johnson—Muriated Tincture of Iron in Fluor Albus, and Opium Poisoning; Medical Libraries of Boston; Tegetmeier's Scholar's Handbook of Household Management and Cookery; Surgeon-General's Report, U. S. Army; Dr. W. H. Bates—Cure of Strictures of the Urethra; Dr. Joseph Holt—Record of Yellow Fever in New Orleans, 1876; Dissemination of Zymotic Diseases amongst the Public by Tradespeople—C. B. Fox, M.D., M.R.C.P.; Report of Medical Superintendent of N. Y. City Asylum for the Insane for 1875; Report of Commissioner of Education for 1875; Disinfection in Yellow Fever, as practiced in New Orleans—C. B. White, M.D.; Chemical and Microscopical Analysis of the Urine—G. B. Fowler, M.D.; Diseases of the Skin—Duhring.

The Medico-Legal Society.

To the Editor of THE SANITARIAN:

The proceedings of the last meeting of the Medico-Legal Society, January 3d, consisted of an unusually interesting discussion of **School Hygiene**, by the President—Prof. Hamilton, Dr. C. R. Agnew, Dr. R. R. McIlvane, J. Appleton Morgan, Esq., Hon. G. H. Yeaman, Mr Owen, Principal of Eighty-seventh Street School, and others. I regret to say that I have not been able to prepare the proceedings in time for February number. Will have them ready for March.

New York, Jan. 10th, 1877.

GEO. W. WELLS, M.D.,
Secretary

Subscribers are particularly requested to detach and fill the blank on the opposite page of this number, and send it to us with amount of subscription due, at earliest possible convenience.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. MARCH, 1877. No. 48.

THE NEED OF SANITARY REFORM IN SHIP LIFE.*

By ALBERT L. GIHON, A.M., M.D., Medical Inspector, U. S. N.

The conditions of the humble seafarer's life are a profound mystery to the people who live on shore. Even those who make occasional voyages on board passenger steamships learn very little about the internal economy of their temporary homes, beyond the two or three sumptuously furnished apartments which they themselves occupy. A still smaller number, on gala days, or other special occasions, are paraded over the show places of a man-of-war, and expected to admire the whitened decks, the glistening brass-work and the polished tins of the mess-kits. Scarcely any one ever sees "poor Jack" really at home. The "fo'c's'le" of the merchant vessel is shunned alike by passenger, owner and officer, while the naval executive carefully peers into every corner and at everything, save those at which his medical colleague points. Ignorance of the passenger, indifference of the ship-owner and negligence of the officer widen the gulf between the sailor and his social superiors. In the navy, notwithstanding the government commissions a corps of trained men, carefully selected from the best qualified of their profession, ignorance, indifference and negligence (here amounting to actual neglect of duty), conspire to cover up and out of sight what the medical officer so ineffectually labors to expose. Special causes have contributed to, if they have not wholly brought about, this result. An unworthy antagonism between the so-called line and staff divisions of the service, based upon traditions of different official and social importance inherited from the British prototype, and encouraged by puerile jealousies and culpable misunderstandings of duties and obligations, have retarded the labors of naval medical officers in the cause of sanitary reform on ship board. From them and their army confrères, more than from any other members of their profession, are to be expected the proofs of the value of sanitary dogma. They have accomplished something, and are not to be blamed that more has not been done; but when their lips could not be sealed their warnings have not been listened to, or have been heard unheeded, and their hands have been tied when they would have pointed out the way to go—a way so broad and straight and bright, that any might

* Read before American Public Health Association, Boston, Oct. 5th, 1876.

follow it even without a guide. The truths of sanitary science are self-evident; nevertheless they are defied on board ship, as on shore. Here individuals may claim the right to dispose of themselves as they see fit, and only when this personal squander of health entails evil to communities is enlightened administration forced to interfere. In the navy there is no such limitation. The individual is lost in the community of which he is a member—he is only one mesh in the net—one cog in a complex machine. The public good is always paramount, and naval medical officers are free from the temptation of the general practitioner, who, in view of eventual profit, may reconcile himself to look with some complacency upon his fellows' determined wanderings in unwholesome by-ways. A sickly season brings no grist to the naval surgeon's mill, but only unnecessary, unremunerative toil. He deals solely with a body of exceptionally healthy, hardy men, and he is independent of and indifferent to the whims and prejudices and superstitions of his charges. He is, therefore, free to exercise that higher and more attractive function of his calling—that of piloting the human bark, freighted with health and hope, safely down the stream of life, to the haven of a happy old age, steering it clear of the hidden shallows of disease, and the bold headlands whither it is drifted by the treacherous currents of self-indulgence. Were he recognized as such a pilot, his advice heeded and his work unhindered, the medical returns of the navy would soon become, in no figurative sense, sanitary charts of inestimable value to every one whose vocation is to live upon the sea—for naval hygiene is essentially marine hygiene. The conditions are practically the same—the congregation of a number of individuals in a floating, transferable habitation, required to be of a peculiar structure for speed and safety, which structure is inconsistent with many of the essentials of good hygiene readily attainable on shore—with irregular opportunities for receiving supplies of food and water—experiencing uncertain changes of season and climate, and subject to morbid mental and emotional states, induced by separation from home, disappointment, despondency or sense of degradation. There are morbific influences, inoperative altogether or in a less degree on shore. To render them as little pernicious as possible, the sick and feeble, and those predisposed to disease, should be rigidly excluded from the community by careful preliminary examination. Manifestly the efficiency of every vessel, whether she be a carrier of freight or of passengers, or of munitions of war, and consequently the efficiency of that service of which she is a part, depends (1) on the excellence of its *matériel*, (2) on the skill and acquirements of its *officiel*, and (3) on the health and strength of its *personnel*. The most formidable iron-clad and the most improved artillery, though controlled by the most enlightened officers, are altogether useless and powerless, unless they have vigorous, able-bodied men to manœuvre them. The ponderous engines which drive the steamship fleetly through the water, stand still if the arm of the humble stoker be weakened by fever, and the armored leviathan, bristling with guns, does not move if the eye of her lookout be glazed by death. "An army in hospital," says Sir Ranold Martin, "as at Coalchesen, at Rangoon and in the Crimea—what availeth it to the statesman or the commander?" A frigate, crowded with guns and officers and men, as at

Key West—what availeth she as an arm of her, or as a menace to that, country's foes?

To provide this personal element of an effective service is the function of the medical corps. It is charged with the primary selection of both officers and men, and with the rigid exclusion of all who are unfitted for its severest exigencies, by actual sickness, acute or chronic, by bodily deformity or professional inaptitude, or by constitutional taint, infirmity, predisposition or inheritance, physical or mental. This duty is usually performed with little hindrance or interference; but when the physician on board ship attempts to say what these men shall do, and what not do, to continue well and vigorous, he is checked and told to confine himself to his "pills" (his opprobrious *sobriquet*), to cure men when they get ill, to give advice only when it is asked, and generally to keep himself in the dim twilight or darker night of official inactivity. With the same ignorance of their own interests and of their medical colleagues' legitimate offices as the civilian who grumbles at paying the physician's fee, who has not prescribed a potion, or who resents his medical adviser's charge to amend his habits, the executive authorities on board ship persist in adhering to the "customs of the service," despite their unhealthfulness, and prefer to stumble blindly in the dark, than be led by those whose duty is to enlighten them. Contributing to this is the dread lest the medical official will, by ever so little a semblance of authority, encroach upon their own sacred and exclusive domain, and get to fancy himself something more than an humble subordinate of the barber or bone-setting caste. Undoubtedly, to medical men, it will seem absurd that any enlightened physician can be suspected of such treason to his profession, as to envy the honors or to ape the authority of any other. Undoubtedly our fraternity would have little pride in the fellowship of one who could think to magnify his calling by borrowed importance, but it is peculiarly the lot of the followers of our noble profession, to be misunderstood. Although its science embraces the philosophy of existence, and therefore treats of problems which should most interest every human being, its plainest facts continue occult mysteries to the multitude, and any vulgar charlatan, to-day Regina dal Cui, to-morrow the Zouave Joseph, commands as large and as respectable an audience, as those learned masters at whose feet we are satisfied to be attentive, grateful students. The medical officers of the navy, despite personal indignities and official discourtesies, have, therefore, hardly reason to complain that the good work they have at heart lacks so much of completion, but they really have much cause for mutual gratulation, that the naval hygiene of to-day is not so sad and doleful a record as it was fifty, or even twenty, years ago.

It would be ungenerous and unjust not to acknowledge the steady growth of a more liberal and enlightened spirit among our colleagues in the other departments of the service. The able men who have, for some years, administered the several naval bureaus, have shown themselves so alive to the real interests of the service, that propositions for sanitary reform are listened to and sometimes adopted. Scurvy and the sweat-box have gone the way of the cat, the bucking-stick and the gag. The brute of the forecastle, once lower in the social scale than the plantation negro; who spoke no other tongue than a

polyglot jargon, accented with curses and obscenity; who knew no ties of kinship nor of country; who experienced no comfort and expected nothing but cruelty; who lived a life of which the only romance was its vileness, has been transformed into a human being—who has been taught something, who is somewhat cared for, who is usually well clothed and well fed, but whom it still remains to see well housed to make him the peer of the mechanic on shore. If much remains undone, we must take into account the radical changes that have been necessary, and not ignore the obstacles to further progress yet to be surmounted. I have, therefore, come before this Association, in the hope that its influence may be actively lent toward the official endorsement of these measures of sanitary reform, which medical officers of our own, in common with those of every other navy, are seeking to accomplish as well in the merchant service as in the national marine of their several countries.

Dr. A. B. Judson, of the Metropolitan Board of Health, and Dr. Heber Smith, of the Marine Hospital Service, formerly our valued colleagues in the navy, have forcibly directed public attention to the beastly condition of the forecastles of merchant vessels, which the latter terms "*the* neglected point of sanitary police." Instances of the apartment in question, selected from the largest passenger steamships and emigrant vessels are described as "very dark and damp"; "wet from leaky decks and slippery with filth"; "the air close, offensive, charged with ammoniacal odors"; "light and air admitted by a companion-hatch thirty inches square and by two nine-inch airports closed at sea"; "approached by a narrow and circuitous passage by stooping under a portion of the anchor machinery, light and air in this case only admitted by the passage of entrance"; "exposed to the further annoyance and offense of proximity to the passengers' water-closets." The berth-deck of the man-of-war is outwardly clean. The rolled up hammocks are of spotless whiteness; but follow the crew below some time when these hammocks are piped down. Stand by this man as he unlashes his spotless white burthen, and spreads out blankets that are as spotless of white. Very likely your hand will involuntarily seek your nose, and the saliva fill your mouth, charged with the poison its sister sense resents. Wait, if you can, till the deck is crowded with these hammocks—if all hands are below, they will hang only *fourteen inches* apart, as they did when Roderick Random went to sea, more than a hundred years ago—and then, if you can still breathe, wait until the crew—in port both watches—are all wedged into place, some scarcely removing their wet and soiled outer clothing, none disturbing the underclothing, which may have been worn for weeks, and if removed would disclose, as only the medical officers and their subordinates know, bodies as begrimed as the garments. You will be glad to escape from the fast stifling atmosphere; but return four hours later, just before the relief is called, or simply stand over the fore or main hatch, or near a berth-deck ventilator, should there be such an apparatus, and the first inspiration will probably choke and certainly nauseate you by its horrible human effluvium. The forecastle of the merchant ship is unclean—its decks slippery with filth, its paintwork black; but eight or ten, or twenty at most, live there. The berth-deck of the man-of-war is clean, as far as squilgees and swab

and water can make it clean, to the inspecting officer's eye, when he visits it in the morning, and all the pots and pans are deftly piled; but there lurks in its air at night, when pots and pans and whitened decks cannot be seen, a more insidious, hideous soiler than bits of yarn or spots of grease—one that squilgees and swabs and water will not remove—one that needs only water and warmth together to enliven into fiercer activity. Unfortunately this poison of *Ochlesis* does not kill quickly. It is no beast of prey, which rends to sudden death, but, vampire-like, it slowly saps the life-blood of its victims, till they sleep beyond awaking. Unfortunately this is so, because its invisible garb and stealthy step prevent its recognition and cause it to be undreaded. Men live on throughout a cruise, recovering a little by day, through their work in the open air on deck, from their baneful sleep at night; or they break down, one after another, some dying, most of them being invalided, and sent to hospitals with phthisis or rheumatism or some other malady, attributed to climatic influence or vicissitudes of weather, or, in the absence of evident exposure, to undiscovered constitutional taint, or pre-existent infirmity. According to Parkes, the extraordinary amount of consumption which prevails in the Royal and merchant navies, and which, in some British men-of-war, has amounted to a veritable epidemic, is undoubtedly attributable to faulty ventilation; and I am satisfied that many a poor fellow has been discharged from our own naval and marine hospitals with fatal pulmonary disease, and refused a pension on the ground that no evidence existed of any exposure in the line of duty, and that the disease was probably, therefore, an inheritance, who might have lived to robust old age, but for the poisoned air he breathed on board ship, which honey-combed his system, and left him unable to sustain the most trifling disturbance. The average of sailors' sea-going lives is estimated at less than twelve years, and the records of the Marine Hospital Service show that during this period over two hundred thousand American seamen die or are physically disabled from pursuing their avocation—an average of seventeen thousand per annum—the result, says the Supervising Surgeon-General, in his annual report, of the food the sailor eats, the clothes he wears, the hole he sleeps in, and the excesses these conditions naturally and inevitably drive him to. "Is it any wonder, then, that there is a scarcity of efficient seamen, that vessels every day leave port short-handed, and that shipwreck and loss of life grow more frequent year by year?" (HEBER SMITH.)

Bad air and watery vapor are the direst foes which menace the seafarer. Leagued together, they are greatly more to be feared by him than the atmosphere of the most sickly climate or the boundless waters which environ him. How to keep out water and how to get in air are the two great problems of marine sanitary science, whether referable to man-of-war, army transport, passenger ship or trading vessel. Naturally the man-of-war should be the exemplar for all the others, and to it we ought to look for the earliest practical applications of the teachings of experience and the revelations of science; but just as patent blocks and capstans were long excluded from the navy, because there was a surplus of muscle to toil and tug, so there is an indifference to the methods of preserving health, because it is so much more easy to supply new material than to care for that on hand. The

executive of the man-of-war, moreover, and, to a certain extent, the mate of the merchant ship, is possessed of but one idea—how to keep his ship clean—and to this all else gives way. As his vocation is chiefly peaceful, he occupies himself in polishing the guns, for which he has no use, and whitening the decks, threatened by no stain of blood. When the hour of battle does arrive, he doffs his epaulettes and fights bravely enough in flannel, the powder marks remain as honorable scars, and the crew watch or rest, without risk of cold or ache, on the dry sanded decks. All over, heedless of the powerful enemy lurking by his side, he begins to clean and clean and clean, heedless that his very method of cleaning is only a method of soiling more perilous to health than the spots and stains he seeks to remove. For years naval medical officers of every nationality have preached, implored, warned and threatened in vain of the danger attending the inconsiderate and indiscriminate wetting of the decks. At one time this practice became so bad, that every wretched little schooner and tug-boat which flew a pennant as the symbol of a naval command, had to be deluged with water every day of the year, at all seasons, in all weathers and at all places, simply because that was the custom on board a full-fledged frigate, where not only spar-deck—but gun-deck, berth-deck and orlop—were inundated, until the hygrometric condition of the atmosphere was raised to saturation—a state of things by which the operation of the morbific influence of overcrowding, climatic causes and vicissitudes of weather is greatly facilitated. What medical officer of twenty years' experience can recall without a heartache the wearying, hopeless warfare in which he has had to engage, in almost every vessel on board which he has served! Unanimous and persevering, something was gained when the practice of coating berth-decks with shellac was established; but only a few years ago, a general order again prohibited this very procedure, than which I know no greater reform accomplished by sanitary science in the domestic circumstances of life on board ship. Fortunately the wisdom of this measure asserted itself, until it became once more a matter of regulation, and the last ships to which I was attached, and which I visited still later, were both treated in this way, and not a voice was heard in condemnation. The lower decks, those of sleeping and other apartments occupied as living places, in every class of vessel, should always be covered with shellac, and when cleaned, this operation being rendered as unnecessary as possible by the careful avoidance of all causes of uncleanliness, it should be done expeditiously, with hot water, mops and brushes, as the housemaid scrubs the kitchen floor. Water in quantity should never be allowed to flow into a vessel; but decks exposed to the weather, gun-decks, orlops and holds, on which unclean work is habitually performed, should be sanded or covered with tarpaulins during this work; wetted only when weather and place are propitious, and simply scraped and re-sanded at all other times. Should the mariner of the future, centuries hence, discover some abandoned "holy-stone," which has outlived history, he will store it among the stone weapons and utensils of our remote ancestors, and wonder what manner of use they could have made of it.

Improved methods of ventilation also materially assist in keeping ships clean, by removing the impalpable débris and dust which in

time settle and accumulate in perceptible quantities; but ventilation, which not only clears, but dries, purifies and vivifies, which is as vitally important to the ship's inhabitant as the oakum calking and copper fastening are to the ship, and which, therefore, ought to command the profound study of every one concerned in nautical construction, is probably the least matter to which, if ever, a thought is given. It is comparatively easy to keep water out, but, unfortunately, what keeps out water often also excludes air. In passenger steamships, where the motive power is always in operation, ventilation is not a difficult problem, while comfortable staterooms and short voyages render the health risk of passengers extremely slight; nor is there any reason why the forecastle in such vessels, which the crew may occupy continuously for months or years, should not be just as perfectly ventilated. The best merchant ships now have capacious houses on deck for the officers, with windows opening on the gangways, rendering artificial ventilation unnecessary; nor is there any reason here why another house amidships, and no less commodious, should not be provided for the crew. Under the top gallant forecastle, where there is such, there is never sufficient space, and it is, moreover, necessarily so encroached upon by the cables and their adjuncts, that it ought never to be used as a location for quarters, while the forecastle proper below deck, into which one man at a time can crawl through a narrow scuttle, without other entrance for light or air, and which is, therefore, ventilated as a bottle might be through its neck—this place, once the only and still that commonly assigned the crew, which they share with the rats and vermin and noisome odors of the cargo, which was never cleaned and never visited by master, mate or owner, and whence, when he had recovered from the blow of the belaying-pin which had sent him senseless to the bottom, the mutineer, seeking revenge, has so often crawled—this vile, stifling hole, both the cradle and the coffin of the sailor, ought never more to disgrace the ships of any nation which boasts its civilization, or where religion teaches that all men—those in flannel and those in broadcloth—those before the mast and those on cabin lounges—are brothers in this world and peers in the next. And here let me remark that the enlightenment of even this day can find no better place for the sick on board an American man-of-war than this same location at the extreme forward end of the vessel, it is true with a few round airports in its sides, habitually closed at sea, in addition to the hatchway overhead, and an entrance through an after bulkhead, by which it is fed—as shown by the experiments of Lieutenant J. F. Meigs, U. S. N., and Dr. Smith, U. S. N.—with from three to six times the quantity of carbonic acid gas which air can contain to be respirable; disturbed, like its analogue on the merchant ship, by the noise of the cables in coming to anchor and getting under way; its atmosphere not unusually befouled by leaking water-closet pipes leading through it, or by bilge ventilators or store-room scuttles opening into it; always dismal and dark and damp—while he who has become ill in his country's service, despite the care to keep him well, should be bathed in light and air, and sheltered as far as possible from the sounds and smells and gloom of the berth-deck. In many of the modern ships of foreign navies, the hospital has a location aft and amidships, or

forward on the gun-deck above the hawse-pipes, with spacious gun-ports that may remain open at sea; and practically the sick in our own service, who require it, are always given accommodation on gun-decks or wherever they can best be treated, even the cabin having been more than once generously surrendered to me for this purpose; but the specially allotted, recognized place for them is still where it was fifty years ago, and where the admiral of the navy, and other officers of advanced views, sustain the medical department in maintaining it ought to be no longer. How little is thought of sanitary safeguards, even by the government, in the construction of its vessels, was seen as late as 1873, during the naval rendezvous at Key West, when the appearance of spotted fever aboard the frigate "Colorado," in consequence of which she was wholly disabled and withdrawn from service on the very eve of hostilities, suggested a sanitary examination, which revealed a system of discharging the foul air of the bilges by a series of openings, covered by perforated plates, running the whole length of both sides of the berth-deck, behind the mess-chests and clothes-racks of the men, and in the staterooms under the bunks of the officers. Human ingenuity could hardly devise a more effectual way of poisoning the atmosphere of a deck at all times the most difficult to keep pure, and yet this same arrangement was discovered on board the "Franklin," the largest and finest of our national vessels, and now the flag-ship of our European squadron, where she represents the flower of the American Navy, side by side the ships of every other great maritime power. I am announcing no secret discovery of my own. Medical inspecting officers have proclaimed these things for years; but so little do their proclaimings avail, that I am told by the executive officer of one of our latest built ships, that the same atrocious system has been there introduced.* When the carpenter of the "Franklin," himself a shipwright of merit and the son of a distinguished constructor, was recovering from what had been almost a fatal attack of low fever, attributable to this cause, he was one of the loudest in denouncing it, and explained how readily these ventilating passages might have been made to discharge into the open air of the spar-deck. Are not they who go to sea, then, almost pardonable in wishing that every constructor—who now, like the school-boy, only watches from the bank the thing he has made to float—might have a similar schooling? Professor Walker, in a recent publication, demands that the State shall see that the common air and common water, which no individual vigilance can protect, yet on which depend the public health and the laboring power of populations in a degree which few even of intelligent persons comprehend, are kept pure; but how much more ought the State to see that the common air and common water are kept pure in its own especial demesne, where the public health and labor power are so essential to its prosperity. The water question has been satisfactorily settled as regards men-of-war. Not a gallon for drinking is now taken on board without the approval of a medical officer, who hence-

* I can bear testimony, from personal observation of the "Trenton," a vessel still in the constructor's hands at the New York Navy Yard, a few days after the reading of this paper, that it is proposed to discharge her bilge atmosphere on the berth-deck, directly under the noses of her sleeping crew.

forth has to assume the responsibility of its potableness; but it required a display, little short of charlatanry, of cloudy precipitates and dense deposits—the greater the cloud the more imposing being the effect—to bring this to pass, and confute the belief that danger could not lurk in the liquid if it were clear. As a consequence, scurvy and dysentery no longer disgrace our medical returns; but how near they stand outside the door, ready to re-enter, was shown by several comparatively recent instances, where the imprudent continuance of the salt ration with diminished allowance of water, and that impure, developed unmistakable evidences of the scorbutic tendency. The impurities of the air cannot be demonstrated through cloudy precipitates to alarmed observers, and its abnormal constituents may only be expressed by lengthy decimals; but, nevertheless, the public health and public strength respond to them with barometric precision. Scurvy has been driven away, but pulmonary consumption, ghost-like, feeds upon its victims in undisturbed security.

No medical officer is unreasonable or insane enough to insist that a ship can ever be made the comfortable and healthful living-place as the house on land. Neither can the sailor hope to enjoy the comforts and pleasant surroundings of the officer. In a necessarily circumscribed space a greater or less number of individuals of humble station have to live, and the effort can only be made to diminish this number to its smallest limit, and to provide for these every safeguard that sanitary science can suggest. The laborer before the mast has no more claim to the nine or ten thousand cubic feet of the admiral's quarters, nor to the three or four thousand of the captain's cabin, than has the laborer on shore to the ease and luxury of the merchant's drawing-room; but he has the same claim as the latter to an unstinted share of that light and air and water which are their common inheritance during life, as an equal space in the bosom of the earth is to be theirs when this is done. There are few ships in the service in which officers' staterooms measure as much as three hundred cubic feet; and confined as is this space, it is further restricted by cumbrous furniture of ancient pattern, by clothing, books and bedding, and by the accumulated purchases of a cruise, while impervious bulk-heads shut out fresh air, often leaving no other source of supply than through the doorway. Sometimes the single small air-port is open; but I have known many officers, through fear of a reputed unwholesome climate, or of a draught, which the average American dreads more than foul air, keep this shut, whilst their doors would also be closed, or shielded by thick curtains, and two or more lighted candles, each to the extent of a human being, would be doing their share toward consuming what Ceudoreet well termed the "vital air," their dull flames attesting its impoverishment by flickering dimness, not to be brightened by any increase in their number. The lagging fire of the engine's furnace is freely fed with oxygen, that combustion may go on and work be accomplished, while it is denied the human furnace, with a like need for that same oxygen, without which its combustion ceases and its work stops. The iron worker stubbornly stands still, but the mind-endowed worker of flesh and blood is made to struggle on, using his own substance to feed his hungry fires. What wonder that, in looking back twenty years, so

many of us find ourselves the sole survivors of a mess. There was a great deal of drunkenness in the old navy, is the whispered suggestion. Alas! how many of those who were drunkards were driven by the imperative cravings of their bodies to that artificial stimulus to activity which was the credited, but only the indirect, cause of their destruction.

If the officer is on short rations of oxygen, what must be thought of the sailor, with his less than a hundred cubic feet of air? The official reports of the Navy Department for 1873 and 1874, show that while on board frigates of the "Franklin" and "Wabash" class each man had from 125 to 175 cubic feet, the cubic air space for each individual on board the smaller vessels was only, on the Shenandoah 96; Menocacy, 95.35; Saco, 90; Omaha, 89; Wyoming, 89; Wachusett, 88; Hartford, 87; Kearsage, 81; Iroquois, 89, and Kansas, 60—the worst of all being the Juniata, which, in 1874, gave only 55 cubic feet per man, with no less than *twenty-nine of the crew reported* as with "*no sleeping billets.*" Was it strange that she was found not to serve the purpose as an apprentice-ship?

Authorities agree that not less than twenty cubic feet of fresh air per minute are imperatively demanded by the healthy human organism. When the same authorities declare that not less than thirty ounces of food are required by that same organism, purveyors make haste to provide it, and, in our navy, actually supply it in excess; but the demand for air is not listened to, or is treated with contempt. The night wind from the marsh is carefully and timorously shunned on shore by the same individual who ridicules his medical associate's declaration that he is generating with all his might a malarial atmosphere around him, by hording up carbonic acid in excess, and adding watery vapor in large quantity to the carburetted hydrogen and the ammonia and other gases which the coal abundantly supplies, and thus furnishing the very food the miasmatic germ requires to develop it into virulence. He scouts at the warning to beware of wet decks, and lights charcoal fires and generates steam to dry them, ignorant that as the temperature rises the capacity for retaining aqueous vapor in solution is proportionally increased. With pitiable self-confidence, he quietly sleeps on the bed he has made, breathes over and over invisible seeds of disease, storing them away in his lungs, to be some day ripened into destructive activity. Many an officer of the navy, who has come from a cruise with a cankering cough he is never to lose, and has racked his memory to recall some cold he caught on deck, or some draught he sat in below, who has boasted his chest development, the very expansiveness of which, I have come to believe, may have invited its destruction, and who has wondered why he should suffer, since none of his family were consumptive, got his death wound in the close bulkheaded and curtained room he occupied, where he breathed over and over an atmosphere vitiated by his own exhalations and those of his frequent visitors; by the constantly burning candles; by the foul discharges from the bilge; by the living odors of a neighboring pantry, and possibly by a private stock of perishable food imprudently stored behind his bunk. Only the medical returns, in their well-filled columns of "diseases of the respiratory organs," attest how many fall in this battle with nature's laws. Four

parts of carbon dioxide in ten thousand represent the normal constitution of the atmosphere; six parts are obnoxious to health; but a series of accurate observations on board the U. S. S. "Omaha," by Dr. Howard Smith and Lieutenant Meigs, discovered in the atmosphere of the forward part of the berth-deck, just abaft the sick-bay bulk-head, during several successive mid-watches, the frightful excess of from *eighteen* to *twenty-four* parts in ten thousand; under the top-gallant forecastle, during another middle watch, twenty-seven parts, and in that open area of the ward-room styled "the country," the officers' assembly-room, one night at sea, 22.7 parts—this at 9:30 P. M., the hour when the apartment was most occupied, and when, the report further particularizes, there were "several candles and two lamps burning, and all sky-lights but one and all air-ports closed." These figures tell their own tale; they need no word of comment.

While it is true that the cubic air space cannot be largely increased, improved methods of ventilation will greatly augment the supply of fresh air, and the removal of the products of respiration, which go to form or feed that mysterious "disease dust" that settles everywhere with such deadly effect. Every stagnant pool of air should be set free; every corner and *cul-de-sac* where it can settle should have its vent; every bulk-head should be perforated above and below, that the currents may have full sweep from end to end of the vessel; continuous air-passages should course everywhere, around magazines and storerooms, encircling and permeating stores and provisions, for Endmann has shown that dilution and motion are detrimental to Cacteneil development. Ventilators, operated by hand or steam (and the system of exhaust fans proposed by Passed Assistant Engineer Baird, of the U. S. Navy), can hardly be improved, should be constantly at work; and the same jealous and zealous care with which the lifting leech of the sail is conned, should be given to setting and trimming windsails, opening air-ports and scuttles, and furling awnings and hatch-covers, to let in floods of light and air, and their inseparable handmaids, health, strength and life.

Good hygienic conditions, which maintain a few in health, ought all the more to be established, since experience has demonstrated that a permanent sick-list of ten per cent. is a far greater cause of inefficiency than an original deficit of twice as many in the complement. The absence of twenty or thirty individuals augments the air space which the presence of an equal number of sick diminishes and deteriorates, while the care these demand, in the name of humanity, interferes with the regular routine of duty. The lessened efficiency of our ships, and the expense attending the invaliding, hospital care and pensioning of disabled men, and the enlistment and instruction of raw recruits to supply their places, are practical exponents of the evils of neglected hygiene, when the mere loss of life, however humble, is not considered of account. But the lives lost are not always humble, for shipwreck comes to both bow and stern, drowning alike the rats of the forecastle and the sleek pets of the cabin; and there is a time when the fever fiend leaves his lair, and silences the voice of command on the quarter-deck, as he had already stilled the voice of obedience before the mast. Preventable mortality, says Ordronaux, is

criminal mortality. Disease is the opprobrium of the physician—the sign that he has failed—culpably if he has been silent, when he should have fearlessly spoken—in his divine mission to banish suffering from the world, and secure to every human being that happiness which alone springs from perfect health. The time has come when ignorance of the laws of living shall no longer be the plea for their violation; when responsibility must be unmistakably fixed—and retribution fully exacted.

Personal cleanliness, proper clothing, suitable bedding, good food and pure water, are all as necessary to the health of the individual on board ship as on shore; but there, the interest of the community being greater, they cannot be left to individual discretion, but ought to demand the constant supervision and authority of the officers of both merchant and naval services. In the latter, while hammocks are scrubbed often enough, and outer clothing washed, it is but seldom that blankets and mattresses are cleaned and aired, and certain undergarments may be worn unchanged for months—a neglect all the more indefensible, since the custom is general of compelling the watches to occupy each other's hammocks, the clean and healthy having, perhaps, to sleep within some other's soiled and repulsive bedding, or, in turn, surrender their own dry blankets to a diseased, dirty or drenched relief.

But it is not possible, within the limits of this paper, to discuss the minor points of the hygiene of ship life. I have only sought to show that this Association, in its concern for the public health, ought to inquire authoritatively into what can be done by government to lessen the liability to disease, by instituting regulations for the better sanitation for men-of-war, passenger and merchant vessels. The ship of which the hygiene is bad carries about a deleterious atmosphere, which not only contaminates those who breathe it, but is a medium for the transportation of disease from place to place. Great obstruction to commerce, and great inconvenience to passengers and merchants, are the results of the frivolous quarantines of Spanish, Portuguese and Levantine ports, which condemn to protracted isolation vessels that have communicated with places where disease had, or might have, prevailed; but a quarantine which would put the ban upon every unclean vessel, no matter whence she came nor whither she were going; which would require a sanitary inspection of every vessel arriving or about to sail, whether line-of-battle-ship or coasting schooner, passenger steamship or fishing smack, China clipper or canal boat, with respect to the location, dimensions and condition of quarters, the appliances for ventilation, the suitableness and cleanliness of bedding and clothing, and the supply and character of food and water—which would not only exclude disease material, but bring to punishment disease-mongers; which would empty hospitals, reduce pension lists, and diminish death-rates—such a quarantine would be an honor to the nation and a boon to humanity, in its saving of the needless waste of human health and life.

There is one other scourge of the human race which is carried from port to port and country to country by means of ships, and which, with pulmonary consumption and rheumatism, is among the prominent facts, to-day, in the health history of the sea—venereal

disease. France, Italy and Portugal, prominently among European governments, would have succeeded in wiping out this blot on humanity, but that almost every vessel, especially those carrying the flags of the leaders among Christian nations, American and British, whose moral-professing citizens shudder at the mere suggestion of any regulation that shall seem to recognize the fact of prostitution, though their abstention from all regulation is the strongest recognition of the lazar-houses which notoriously adjoin their very churches, brings new grafts of that deadly tree which spreads its branches to take root, like the banyan, wherever it can find soil. We bolt our doors upon small-pox and typhus and relapsing fever, and put miles of water between the ships that bear them and ourselves; but we allow the infected sailor and passenger to land, and breathe a breath that may not only wither our own sons, but blight those pure, defenseless ones who are still nearer and dearer. How little children and delicate women are poisoned by wet nurses, housemaids and cooks; how young maidens are betrayed by the kisses of lovers who would rather have died, had they known the ruin they unconsciously wrought; how myriads of wives are made to suffer life-long agonies and go to untimely graves, from the embraces of husbands who, before their marriage, had syphilis or even gonorrhœa, any physician of large seaport practice can sadly testify! Shall nothing be done by us to check this hideous destroyer, or, if we stand with averted eyes, while other enlightened nations are hedging it in so satisfactorily by the sanitary inspection of abandoned women—shall we not, at least, take care that the men, whose slaves these wretched women are, shall not add bodily pollution to their moral staining, and magnify their iniquity by making them disseminators of irreparable hurt to sisters who have not sinned, and to innocents yet unborn?

Finally, ships are not only carriers, but generators of disease. In the history of our navy, there are many instances where disastrous zymotic fevers have been developed on board men-of-war, from the decomposition of chips, planked up with scandalous criminal negligence beneath the ceiling during construction, and there left to rot with other vegetable refuse from provisions and stores, especially coal, and the putrescent microscopic organisms, killed by the mixture of fresh and salt water, from accidental leakage and injudicious wetting of the decks. This decomposing mass of vegetable matter, subjected to the simultaneous action of air and moisture and high temperature, thus supplies every requisite condition for the production of malaria; and many a vessel, in consequence, carries to-day a fouler marsh in her own bottom than she can find anywhere on earth under the open heaven. Let her carry it to a latitude where the temperature is high, and then soak the spongy decks, until the atmosphere is so saturated with the vapor of water, that the fall of a single degree will precipitate it in a miniature rain,* and it will not be long before the death-roll is called, and those who most disdained the physician's warning will be first and loudest in appealing to him for help. A sanitary inspection, which will make such things impossible, will not only save

* The Surgeon of the Fleet of the Asiatic Station informs the Department that this is the case on board the "Tennessee," the flag-ship of that squadron.

life, but money—a double object, which should, therefore, enlist on the one hand the philanthropist, who needs no higher motive than the good of his fellow-man, and on the other the practical economist, who coldly calculates, cuts and measures results in coin.

———o———

Disinfectants—When they should be used.—A correspondent of the *English Mechanic and World of Science* writes:—But for the sake of saving things which it would be a pity to burn, you had better turn your eyes another way—toward sweetners, not stinks. As fast as you can, use yourself and your family to as much clean air as possible. Let the rule be to let in all the fresh air you can afford, not only so much as you think you must. If you live in a district soddened with foulness, shift. Shoe leather is cheaper than physic, and it will be better to get up at five to go to work, than to get up at two to lay somebody out; besides, you will have better heart for everything. Read Ruskin's "Athena," if you can; and bear in mind that when you bar out the goddess Athena, Queen of the Air, you bar in a serpent whose subtle poison will shorten the number of your days, lessen your strength, and undermine all the glory which should bless them. Have water that looks clean, tastes clean, and, whenever you lift the lid from a kettle or saucepan, smells clean. If in doubt, catch some rain water and filter it. Use the smallest quantity of stimulants—beer, tea, pepper, &c.—that you can live happily on. Let your food be sound. If you prefer some flesh, have it fresh. Better it be tough than decayed. Avoid dishes made up of a lot of things; aim at simplicity, which will not hinder you from having the necessary pleasant variety from day to day. Nourish well without overfeeding. Let your children have a warm wash every night, and see that it is so done that it shall not be a miserable sloppy mess. When strong enough—say in spring—let them have a cold bath every morning, followed by a good rubbing, and, above all, let them do at least two hours' useful muscular work each day. If denied useful work, then walking, rowing, &c. If you will use disinfectants—and chlorine is not strong enough—try nitrous acid, made with copper turnings and aquafortis. Rooms should be empty. Use chloralum or aluminic chloride in washing linen.

———o———

Bad Air.—At the present moment thousands of people are taking the most scrupulous care to exclude as much as possible of the enlivening, invigorating atmosphere of winter out-of-doors. In other words, to tell the truth plainly, they are doing their best to smother themselves to death. Perhaps one reason for this misdirected caution is that the people have been misinformed. Dr. Hall, a writer who said and wrote a great many excellent things, claimed that "it is safer to sleep in bad air all night with a temperature over fifty, than in pure air with a temperature under forty." Every-day experience teaches us that this is a grave error. The system can readily supply a deficiency of heat from its own resources; but it cannot in any way make up for a deficiency of pure air.

Ample ventilation is needed at all hours; but especial attention should be paid to ventilation during sleep. There is no danger in having a sleeping apartment well ventilated, provided one sleeps warm, being well protected by an abundance of blankets.—*Health Reformer.*

SCHOOL-ROOM CROWDING—BROWN'S DREAM.

At the close of a March day, Dr. Toby was returning from his round of visits. His patients that day were mostly children. Scarlet fever, measles, diphtheria, ophthalmia in various forms, had taxed his skill and touched his sympathies. His way lay past Brown's, and he determined to call. He hoped to hear Brown's lively comments on the events of the day, and so succeed in driving away the recollections of the scenes of suffering he had witnessed—scenes doubly distressing to him because, he believed, in a great measure preventable.

Contrary to expectation, he found Brown taciturn, sober, blue. He rallied him on his gloominess, when Brown exclaimed: "Now, doctor, I know you'll laugh and tell me to avoid late suppers; but the fact is, I have had a dream and cannot shake off the impression it has made. It has set me thinking;" and Brown thrust his hands into his pockets, dropped his chin upon his chest, and gazed steadily at the fire in the grate.

"It wants an hour to dinner, and I have no engagement, so let me hear the wonderful dream," said the doctor. Brown seized the poker, stirred the fire until it glowed, and thus began:

"It seemed that I stood before the gate of the Golden City and knocked for admission; a voice cried out, 'Who's there?' 'Brown,' said I. 'Too indefinite;' and the form of St. Peter appeared above the gate, with a large book in his hand, in which he seemed to search. 'Occupation?' he asked. 'Merchant,' I replied. 'Brown, merchant;' said the good saint, running his finger down the page; 'not here,' and he seemed about to close the book. 'School trustee,' I added, in a hesitating tone. He turned again to the book. Running his finger down the page, he said, 'Brown, Trustee of P. S. No. 505.' 'That's it,' said I, suddenly brightening up, for if my name was there, I thought I had only to walk up to the cashier's desk and draw my dividend. 'Well! what good have you done down there?' said the saint, nodding in the direction of the world. This dampened my ardor. I remembered that I had received, on one occasion, three votes for deacon of our church; that I was a director in a horse-railroad; that I put my name on to all subscription papers presented; but none of these seemed to suit the atmosphere of the country in which I was, and so I ventured to say that I had got a school-house built in my ward. The good saint, who had been gazing intently upon a group of children playing on a sunny bank, suddenly turned to me and said, 'What kind of a one?' I wished that I had with me some of the plans we have in our board. They look so fine upon paper, and so confoundedly like a rope-walk, or tenement house, when put into brick and mortar. I described P. S. No. 505 to the best of my ability. 'Nothing like it in these parts,' said he; 'how many do you put in a school?' 'That depends,' said I. 'Depends on what?' said he, in a tone of voice that made my knees tremble. 'Upon how many want to come,' I replied. 'What do you do when the rooms are full?' he then asked. 'Make additional ones out of the play-

rooms,' I answered. 'Where do the children then play?' he inquired, in a tone I didn't like; but I plucked up courage and answered, 'They don't come to school to play—they come to school to learn.' I said this all the bolder because it wasn't original with me.

"'When these are full, what do you do then?' he asked, in a tone that indicated that he thought me cornered. 'Put them in wardrobes and under the stairs,' said I quite readily. 'What then?' said he, with a sternness that made me wish I hadn't been quite so fluent with my answers; but I remembered that I had never advocated putting children in the coal-hole or astride of the ridgepole, so I answered, 'Put them in church basements;' and I emphasized the word church, hoping to turn his thoughts from school-houses, that are used five days in the week, to churches, that are used but one day in the week. But I didn't succeed. 'What then?' said he, impatiently. 'We promote and fill up again.' The good saint made a gesture of despair. 'What kind of teachers do you give these little ones, crowded into dark basements, huddled into wardrobes, stifled under stairways? Good ones, I hope; those with judgment and experience, and full of love for them.' I was sorry that he touched on this subject, for I thought he would pardon my sins on the school-houses, for I was but one out of many. But in the matter of teachers I feared that I had not so much to plead in excuse, so I answered: 'Your reverence, when I go to Boston and am asked this question, I say yes, but as your city doesn't lie in that latitude, I may as well confess that I do no such thing. I put in young girls sixteen years of age, who can't define judgment, much less possess it, with no experience; pupils themselves yesterday, to-day with the destinies of eighty or a hundred little children in their hands; heads so filled with balls, parties and novels, that there is little room for love of children—these are they to whom I commit the children in dark basements, crowded wardrobes and stifled closets!' and, doctor, I dared not look the good saint in the face, but stood with bowed head before him. Presently he said, 'Look!' I looked, and beheld a great multitude of children whom no man could number, sporting on the plains of the Golden City. 'There are they whom scarlet fever, diphtheria, pneumonia have taken from your ill-ventilated, fever-breeding school-rooms, under the charge of children themselves. Think how many desolated homes, blighted hopes, these children represent. These are the children you have helped to———' There was a crash, the golden gate vanished, and in letters of fire I read these words: *'Inasmuch as ye did it not unto the least of these, ye did it not unto me.'* I awoke; Mrs. Brown was opening the shutters, and the rays of the morning sun fell on my face. Doctor, I have seen those children all day long, and did not dare to go to the school this morning;" and Brown fixed his gaze intently on the fire.

There was silence for some moments, broken at last by the doctor, who said, "You have seen the children released from their bodily sufferings; I to-day have seen them writhing under their pains. Ill-ventilated and overcrowded school-rooms are the remote causes of a large amount of this suffering. Both public and private schools are equally guilty. We wonder at the stupidity of our fathers, who provided seats without backs for their children, but gave them plenty of

fresh air and of room. Posterity will condemn us, who provide comfortable seats, and deprive our children of air and of room. Your plan of putting six and eight children on a bench, so closely seated that they can hardly move, is horrible. Itch, lice and sore eyes travel along the whole line." "No such children are allowed in my school," said Brown. "Nothing but a minute daily examination can determine that," continued the doctor. "And have your young and inexperienced teachers, who, with a fatal blindness, are placed over them, the time, tact and judgment to make this examination?" Brown did not reply, and the doctor went on. "As a citizen of this commonwealth, each child has a right to his individuality; to a separate and distinct seat; to at least six square feet of space, over which he is master and for which he is responsible. Citizens of republics can be made in no other way. All this abominable arrangement of settees, galleries and extra seats must be relegated to the dark ages." "Doctor, you are crazy. On this plan P. S. No. 505, with its two thousand pupils, would become a one-horse affair of about five hundred," said Brown; "and from being chairman of the first school in the city, I should come down to the level of Jones, who is chairman of a little primary in the suburbs. I never would consent to that. A Frenchman, in my presence, boasted of his famous schools, with a beggarly two or three hundreds. When I told him that mine had over two thousand, you should have seen him open his eyes. Think of the cost. Four schools do the work of P. S. 505!" "Not all the work, Brown," replied the doctor; "they couldn't fill the cemetery so fast. There is money for jails, almshouses and prisons when overcrowded—why not for schools?" "We don't get half of the money now for which we ask," objected Brown. "Because," replied the doctor, "you do not ask in faith. Back up your demands with facts and figures so potent that the powers that be dare not refuse. If they do, appeal to the public. No American community ever refused adequate support to an energetic school board." "Meanwhile, what shall we do when children apply?" asked Brown. "If the class is full, refuse them," answered the doctor; "refuse them in justice to those already there, in justice to themselves."

"But is not a half a loaf better than no bread?" queried Brown. "Not if the half offered contain the seeds of ill health and premature decay," replied the doctor. Brown said nothing, and the doctor continued: "Medical men have written volumes upon the evils of overcrowding the schools. Again and again have they demonstrated the least space a child should have; the lasting evils of foul air; the eye-destroying power of ill-lighted rooms—and yet this crowding continues, the same ill-arranged barracks are continually repeated. The Sanitarian has laid siege against these murderous barracks and the newspapers occasionally fire a shot; but the blind, who will not see, persist in comparing themselves with themselves when *they* were children, and so keep up a stout resistance. Continuous bombardments, and by the whole power of the press, will alone do effectual work; and, Brown, it is coming. We cannot hold our own with the schools of other nations, unless there be great improvement, both in their physical and mental conditions. The editors did not go through the great Exposition with their eyes shut. With our wonderful physical and mechanical prosperity our schools have not kept pace. In the next ten

years the press will hold every school trustee to a strict account of his stewardship. Brown, take a step in advance to better the physical condition of P. S. No. 505. Reduce your grammar classes to forty pupils, your primary classes to fifty; give each pupil a separate desk, put over him a man or a woman for a teacher, not a girl, who still ought to be in the academic class or normal school; and then, when you approach, in reality, the gate of the Golden City, no pupil of P. S. No. 505 will be there to accuse you of crowding him out of life." "Toby, there's my hand; I'll do it!" said Brown, and the good doctor went home with the happy consciousness that that resolve meant life and health to many a child, for Brown was a man of his word.

Gentlemen of the Educational Boards in the cities of our fair land, will you not follow Brown's example? PHILO.

Fatal Steam Boiler Explosions.—By clippings from our exchanges during the last year, we find the killed and wounded from steam boiler explosions as follows:

	Seriously Wounded or Scalded.	Killed.
From N. Y. Herald, March 29th, 1876. Boiler exploded, Newark, N. J	10	1
" Smith Paper Co.'s Mill, Lee, Mass	1	1
" N. Y. Herald, March 29th, 1876. Locomotive boiler, Glasgow, Scotland	9	5
Explosion, March 31st, Fletcher Mill, Providence, R. I. Boiler said to have plenty of water, and in good condition. Loss, $20,000	1	2
From N. Y. Times, English steamer Thunderer (war ship), pressure below 30 lbs. at time of accident	56	15
" Am. Manufacturer and Iron World, Pittsburg, Pa., Aug. 10th, 1876. Steam Shovel Factory at Springfield, Mass., boiler thrown 500 feet over an embankment	1	
" Am. Manufacturer and Iron World, Pittsburg, Pa., Aug. 10th, 1876. Mine near Hermitage, Shenango Valley, Pa., boiler thrown 200 feet	1	
" Boston Post, Aug. 18th, 1876, boiler of a Japanese steamer burst in Inland Sea, July 4th		20
" N. Y. Herald, Sept. 4th, 1876, Farm. C. J. Jones, near Chatfield, Minn., boiler thrown 200 feet	1	3
" N. Y. Ev. Telegram, Sept. 2d, 1876. Steamer at Trenton, La. (several wounded). Steamer total loss	3	2
" N. Y. Sun, Sept. 5th, 1876. Yard Louisville & Indianapolis R. R., Jeffersonville, Ind., gauge indicated 65 lbs. steam	6	1
" Evening Telegram, Oct. 12th, 1876. Zug & Co.'s Iron Mills, Pittsburg, Pa	50	14
" N. Y. Herald, Oct. 18th, 1876. Carbon Hill Coal Mines, 14 miles west of Richmond, Va. 13 *boilers exploded*		2
" N. Y. Sun, Oct. 27th, 1876. Boiler in a flour mill at Marcellus (a number were scalded). 2 fatally injured		3
" N. Y. Herald, Nov. 1st, 1876. Boiler of a locomotive on the Alexandria, Manassas & Orange R. R. A youth badly scalded		2
" N. Y. Herald, Dec. 12th, 1876. Boiler in Engine House of Copperas Mine on Greenpond Mountain, near Dover, N. J., Dec. 11th	2	2
	141	73

This probably presents but a small proportion of this class of "accidental" deaths and injuries, but it is large enough to merit attention. Properly constructed boilers under competent hands are not subject to such "accidents."

NEW YORK QUARANTINE.

ANNUAL REPORT OF THE HEALTH OFFICER FOR 1876.

The experience of the past year has developed some points of special interest. It is gratifying to state that the principles which were established five seasons since with reference to the treatment of vessels in quarantine have been again amply vindicated. In a season unusual from the number of places in which yellow fever prevailed as an epidemic, as well as its presence in the hospital at Dix Island, except during the month of May, from February until the latter part of October, still not a properly authenticated case reached the city by way of the sea, nor was a steamer or sailing vessel so restrained as to retard her regular sailing.

Yellow fever has prevailed more or less in an epidemic form during the past season at the following ports:—Brunswick, Ga.; Bahia, Barracoa, Caibairion, Cienfuegos, Charleston, S. C.; Cardenas, Havana, Matanzas, New Orleans, .Pernambuco, Para, Rio Janeiro, Santos, Sagua-la-grande, Savannah, Ga.; Vera Cruz, Trinidad de Cuba, Wilmington, N. C.

From these points of infection 363 vessels arrived between the 15th of May and the 15th of October, ninety-nine of which had the disease on board, either while in port, on the passage, or after their arrival here. Three hundred and fifty-five cases of yellow fever have been thus reported. Two hundred and thirty-nine at the port of departure, sixty-seven on the passage hither, and thirty-nine in this port. With the exception of the month of May, patients were at the hospital from January until the latter part of October. Sixty have been treated there; as stated above, thirty-nine of these were yellow fever; the remainder either some form of malarial fever, which in its features so nearly resembles yellow fever that time is required for observation to determine the precise character, or else of urgent cases, which it was deemed best for the safety of the patient that he be taken at once from the vessel, instead of proceeding to the city.

Of the thirty-nine cases of yellow fever eleven died, showing a favorable percentage of recovery, which must in a great degree be attributed to the airy and healthy location of the hospital. Cases of yellow fever were in the hospital every month with the exception of May, and almost continuously from June to the middle of October, showing its arrival and presence in the harbor for a longer period than for many years past.

The presence of yellow fever at Brunswick, Savannah and Charleston, all lying within a point from which steamers could complete the passage within the average time assigned as the incubation period of the disease, rendered it necessary that some arrangement should be made whereby the commerce from those ports should remain unrestricted. It was directed that no passengers be taken on vessels coming from those ports. This left me to deal with the crew and cargo only. Full hygienic precautions were suggested to the steamers plying between Savannah and New York, which on their part were faithfully carried

out. The usual course was pursued with reference to the vessel and cargo as with all vessels coming from infected ports. The vessels made their trips during the whole epidemic with their accustomed regularity; indeed, for reasons about to be stated, extra vessels were placed upon the route. So far from New York being a loser, she was a gainer in a commercial aspect from the fever epidemic at Savannah. She was the only port on the Atlantic coast which permitted free commercial intercourse with the infected city. With Baltimore intercourse by sea was almost wholly interdicted, while at Philadelphia an entire embargo was laid upon all communication by way of the sea. The agent of the Philadelphia and Savannah line complained "that not only was all intercourse interdicted, but the authorities would neither allow his steamer, then at Philadelphia quarantine, to discharge nor depart for another port."

It seems scarcely credible, after the full light of recent experience, so suicidal a policy should have been pursued. Had the fever fomites really existed upon the vessel, no decision could have been adopted which would so likely cause the epidemic to appear. Experience has fully shown that but the nidus of fomites allowed to remain unmolested in the hold of a vessel will so rapidly develop as soon to make the vessel a pest ship; whereas if the cargo is speedily removed and the vessel thoroughly cleansed, danger is reduced to its minimum factor.

The consequence of this embargo was, that not only was an excess of cotton sent from Savannah to this port, as compared with previous years during the same period, but all the vessels trading from Charleston, Wilmington, and even Norfolk, were tasked to their utmost carrying capacity. Sanitary measures and commerce need not therefore be antagonistic, and in this instance the former aided the latter.

Though nearly a thousand deaths from yellow fever occurred in Savannah, no well authenticated case reached the city of New York, except those of two gentlemen who came by rail. Two or three cases of sickness from vessels occurred in New York and Brooklyn, which were supposed to be yellow fever, but which the accompanying history failed to substantiate. Isolated cases of malignant malarial fever and yellow fever resemble each other in so many of their manifestations that nothing but the most experienced diagnosis can command confidence. The previous history, as well as the subsequent stages of recovery, must enter as factors in forming the decision. While in all cases of sickness, suspected of being able to be transmitted, all precautionary and repressive measures should be employed, the public should not be needlessly alarmed until the nature of the sickness is definitely determined.

Fewer cases of ship fever and small-pox have arrived than for many previous years. This is chiefly attributable to the great falling off in emigration, and consequently the smaller percentage of persons liable to be infected. Two cases of fever have been taken to Ward's Island, and ten cases of small-pox to Riverside Hospital on Blackwell's Island.

I desire, in conclusion, to renew my expressions of confidence in the faithfulness and ability of Deputy Health Officers Thompson and Macartney.

S. OAKLEY VANDERPOEL,
Health Officer of the Port of New York.

Quarantine, Dec. 31, 1876.

SCHOOL HYGIENE.

Proceedings of New York Medico-Legal Society, January 3, 1877, Prof. F. H. Hamilton, M.D., LL.D., President, in the Chair.

Prepared by Dr. G. W. Wells, Secretary of the Society.

The President introduced the subject by remarking that a few words seemed to be necessary by way of explanation to those gentlemen, not members of this Society, who were present. The subject of the sanitary condition of the schools of this city came before us as one of the matters properly included in the term "State Medicine"; and while we have in the main restricted our studies and debates to questions of medico-legal science, we have always held that it was within the purpose of our organization to consider any question of importance pertaining to "State Medicine," of which medico-legal science is, strictly speaking, only a branch. In addition to this, we have the common right of citizens to inquire into all matters which affect the public interest.

Our action cannot, therefore, be regarded as officious interference with the duties of the Board of Health, of the Board of Education, or of any other of the municipal or State authorities. We claim the right to examine and to suggest modifications of the laws, or improvement in the management under the laws, in all things relating to the hygiene of our schools, whenever and wherever such modifications or reforms seem to be required.

We have entered upon the consideration of this subject with no predetermination to find causes of complaint, but only to be assured that, while the State does its duty in securing education for all classes, it does not impair the health or destroy the lives of these precious children—upon whom the happiness of families and the prosperity of the city depends—nor that the schools become centres of infection, from which disease may be spread throughout the land.

The citizens of the United States have been accustomed to speak of their free school system with pride, and in this city especially we have been accustomed to call the attention of the stranger, with almost Pharisaical complaisance, to the number, the size and the architectural beauty of our common schools. We have invited his attention also to the munificence of the city in its appropriation of funds; to the intelligent, unremitting, and, to a great extent, unpaid labors of the Board of Education; and finally, to the excellent and systematic management of our schools by the teachers in general, and in most of their details.

I believe, gentlemen, I may be permitted to say that thus far our investigations into the condition of our schools in this city has in no degree humbled our pride, or abated our Pharisaical pretensions. Nevertheless, we have discovered defects—weak points in the masonry, want of cohesion in the iron, lack of strength in the trestle-work, which the architect and engineer, who crossed the bridge an hour before us, failed to see. We—the medical half of our Society—claim to be experts in matters of hygiene, and that we can see some things that others cannot. We believe we see defects, some of which are trivial

and might easily be remedied; others more serious, and apparently more difficult to remedy—at least without additional legislation. It is apparent, for example, that under the present law, rendering attendance at school obligatory, and which law most good citizens desire to see, in one way or another, enforced, the crowd and strain upon the schools is excessive, and either the pressure must be relieved, or the whole structure must give way.

A large proportion of the defects in the practical working of our city common school system we believe to exist, also, in many, if not most, of our private schools. To some of these defects, and to the proposed remedies—so far, more especially, as the public schools are concerned—we invite your attention; in the sincere hope that, with the co-operation of the Boards of Education and of Health, aided by our humble influence, you—the citizens of New York—may secure the needed legislation; and thus enable the Board of Education to apply and enforce such reforms as will render our schools, in a sanitary point of view, not alone equal to, but far superior, to most other schools.

The Hon. George H. Yeaman, one of the Vice-Presidents of this Society, and Chairman of the Committee on School Hygiene, will, in his report about to be submitted to the Society, inform you what progress we have made in the consideration of this subject, and what suggestions the Committee is prepared to offer. I beg that you will give us, also, the benefit of your experience and counsel.

Final Report of the Committee.—The Hon. GEO. H. YEAMAN, Chairman, referred to the past labors of the Committee as heretofore presented. These reports have attracted considerable attention not only in the city of New York, but in other cities. He did not intend to go over the ground again, any further than to consolidate their conclusions in four propositions, which the Committee were now prepared to submit for consideration and discussion, and which may be termed their final report. They are as follows:—

In addition to what has heretofore been submitted, as the results of their investigations, they recommend the following:

I. That the minimum age of admission to the public schools be made six years, instead of four.

II. That the maximum attendance at school, for children under eight years of age, be made three hours daily, with suitable intermissions.

III. That provision be made by law for medical inspection and supervision, to secure the adoption and enforcement of sanitary rules.

IV. That the law providing for compulsory education is, in its main features, based on a wise public policy; but its enforcement demands that additional school room be provided, for the increased numbers of children attending the public schools since its adoption.

V. That larger play-grounds should, so far as practicable, be provided for children in the public schools; and in improving present school houses, or in building new ones, they should be surrounded on all sides with adequate open space, to secure light, ventilation and play-grounds.

Affections of the Eyes.—Prof. C. R. AGNEW remarked, that for more than two years he had been interested in trying to deter-

mine for himself what the influence of school life has been upon school children, and to separate those facts which may be justly attributed to the influence of the life inside of the school house from those which might, perhaps with more propriety, be traced to certain conditions of the life of the child at home, or elsewhere out of the school house. It is important, in determining the effects of school life upon children, that we study the entire life of the child, as far as possible. We should take into account questions of heredity —questions of the hygienic condition of the child in its home—so that we may be able to know whether the little one is a good "tissue bearer," as the Germans call it, or not. Of course we all know the effect of school life as bearing on the health of the child. It will depend in a great degree upon the heredity of the child, and upon the way in which the particular child builds its tissue. We all know that many things may be borne with impunity by the strong and robust and stalwart, which would produce diseases of a grave character in those who were not so well able to throw off the deteriorating influences.

Now the difficulty in separating the effects produced by school houses—the life in school houses—from the effects of heredity, and in the homes of the children, is greater than he had ever expected to encounter. In common with all physicians, he had been much interested in the paper which Combe, of Breslow, published about a year ago, containing his observations as to the conditions of the eyes of children in the vicinity of Breslow, in the villages of the country around about, and in the school houses of the city and in its university. Combe found that in the children of the villages the amount of near-sightedness was very small—not exceeding two per cent.—and he started out with this as a basis. Assuming that two per cent. of near-sightedness is found in the village children—which may be accepted as indicating about as near an approach to the normal condition as may be found anywhere—he started out, and continued his observations through the primary and intermediate schools of Breslow into its university; and he found that there was a progressive near-sightedness continuing upward, until in the university the amount reached as high as between 60 and 70 per cent., as against two per cent. in the children of the villages—of those who may not be supposed to transmit to their children any special tendency to those forms of eye disease which are generally considered to be due to over-use; for we all know that the children of German peasants generally live in great simplicity, and do not use their eyes in anything which involves straining.

When he began to consider the subject, he was met by the statement that in this country the conditions were peculiarly favorable to children. In Germany the dietary was not so good as that prevailing here, and the school houses were not so well built. There was not the same attention to the sanitary conditions or architectural advantages there as here. Their system of education was more severe; and the children were put under this system and kept under it continuously from the tender age of six or seven until they had passed through the University; and that their school houses, being in an insalubrious condition, effects were produced which were not found

here, and, indeed, were not expected. He could not accept the statement, and accordingly it occurred to him to draw up some tables, very much like those of Combe, and to have some investigations made in this city and in Brooklyn, as well as in the city of Cincinnati. Taking New York—a great metropolis—and supposing that the children of its population would, perhaps, show as quickly as any other children to be found anywhere else the effects of straining; then taking the children of a city just in sight, a little more provincial than yours—the city of Brooklyn; and then taking children from a city like Cincinnati, where there is, as might be expected, less strain brought to bear upon the eye than in either New York city or Brooklyn. He sent tables to Drs. Prout and Mathewson, of Brooklyn, requesting them to go into the schools of Brooklyn and make such observations as were indicated. They selected a school which had become famous for the ability of its faculty, and for the success in preparing young men for college and for the more advanced states of culture—a school in which the drill was known to be unrelenting—where a boy was expected to do his duty or go elsewhere.

A like table was sent to Dr. Williams, of Cincinnati—a man perfectly capable of making reliable examinations into the conditions of the eyes of the school children there. Dr. Williams examined a large number of school children in that city, taking the children in the primary, intermediate and high schools, as Drs. Prout and Mathewson had done in Brooklyn.

He also gave tables to the house surgeon of the Manhattan Eye and Ear Hospital, and Dr. Cheatham requested him to make examinations in the New York College. Now the New York College stands at the head of our public school system. The boys reach it by merit, and they may be considered, so to speak, the cream of the system.

These tables were sent to these different observers, and the different observers were kept in ignorance of the work that their fellows were engaged in; and they were requested to send the tables back to us so soon as a few were fil'ed, and not to keep them until the whole series were completed; but to send them back from time to time, and not to make any summation, not to attempt to draw any deductions from them, the idea being, as you doubtless observe, to have the services of reliable observers in gathering facts without their knowing what these facts would probably show, in that way hoping to obtain results which would be less liable to error than if the observers were allowed to correspond with each other, or to sum up any unfinished portion of the work from day to day.

Now when these tables came back and we summed them up, we found a very striking correspondence between them and the tables obtained from New York and Brooklyn, as well as those constructed by Combe of Breslow—that the near-sightedness increased in the schools—in these middle schools of Brooklyn, in the New York College, and in the graded schools of Cincinnati, in about the same ratio as in the schools of Breslow. We of course then immediately reject the idea that the children of Breslow and its vicinity were under influences that were peculiar, for we found that the children in the corresponding schools of Brooklyn, New York and Cincinnati presented the same results.

Then the thought occurred to him, How far is this system of education generally pursued to be charged with bringing on this state of things, in which the eyes of pupils are brought in a condition which every intelligent man is compelled to regard as deplorable? Now while he recognized the fact that this extreme degree of near-sightedness, increasing rapidly in our schools, is deplorable, he was forced to the conclusion that the schools themselves are to blame in this country in as great a degree as he had previously supposed, and as many allege. He had no doubt but that the work in the school is chargeable with causing a very high percentage of this near-sightedness, but he was not prepared to give an opinion as to the value of these figures. The question is entirely too serious a question, and we should be very careful how we employ statistics—because we all know how readily statistics may be made to do harm. They are like a two-edged sword—they cut both ways; and it is the part of wisdom to be extremely careful in the deductions we make.

While, then, there is found to be a deplorable increase of near-sightedness in these schools, he could not satisfy himself as to how much of the evil is due to conditions in the schools themselves, and how much to conditions of heredity, and conditions existing in the habits and homes of the scholars.

With regard to this matter of near-sightedness—of progressive near-sightedness—it may be stated as a truth that the near-sighted eye is not a natural eye. The child, when it comes into the world, has a normal eye, which is not a near-sighted eye.

Now if the eye is an organ which is soft as it were when the child is born, it is plastic—it is in a condition to be changed in its shape, and its tissues are in a condition to be moved—that is, the tissues which go to make up the organ can be moulded in various shapes on pressure. Ordinarily the child goes on until it has reached the age of eight or ten years, or perhaps a little older, when it is observed that it is obliged to hold the object at which it is looking a little nearer than before. An examination reveals the fact that the child is near-sighted. This condition usually progresses more rapidly between the ages of ten and twenty-six. But we know by means of the ophthalmoscope, and by an examination of the body after death, that the near-sighted eye is changed in shape from the spherical to an elliptical or ovoid form, and that progressive near-sightedness is always marked by a change in the shape of the eye. As the eye is made up of healthy tissue, and it is constantly undergoing waste and repair in use, you readily perceive that the quality of its repair is going to be determined very much by the character of the tissue-building quality of the particular child, and by the way in which that child uses its eye. Parents at home are very often at fault in not teaching their children how to use their eyes—he had suddenly entered the dwellings of many people, and seen little girls curled up on a sofa, or in a chair, with head down in the lap, the vessels of the forehead turgid with blood, remaining in that situation for a greater or less time; and often, before the child can read, some object, like a doll with its wealth of intricate clothing, or some other plaything—the child holding the object near her eyes—using her accommodation and focalizing its eyes; and all the time waste and

repair is going on—because there can be no use of the eye without alterations of tissue, and the child will go blind because the proper nourishment of the eye is interfered with, and the tissues cannot be reproduced as fast as the wasting process. If the child uses the eye for a long time or too closely at any particular form of work, the tissue cannot be reproduced or nourished as it should be; and the pressure of the muscles upon the eyeball and the difficult act of the girl in focalizing, means that the tissue of the soft and pliable eye is undergoing alteration, which will lead to a lamentable form of the disease. Then the child goes into the school and is there put into forms and classes, and oftentimes is made to do work on slates and copy-books which, perhaps, might be better done on the blackboard, and thus the eye is strained until the mischief is perceived in its effects. And just here it may be remarked that if we could effect some alterations in the style of school architecture in our school houses, especially the primary departments, it would be a great *desideratum*. One of the greatest evils at present existing is the method of constructing the school-room and of conducting the same. He never could understand why children of the primary age are kept sitting on benches for a large number of hours at a time. School houses ought to be built like the hospital building at the corner of Lexington Avenue and 42d Street, used for cripples, where there is in the upper story a large room, called the Solarium, which is, in fact, a large play-room, exposed to the sun, where these little ones are kept the greater part of the time. The upper story of the school houses should be so constructed; and children should be encouraged to bring their toys and playthings with them; and then, instead of changing the age of admission from four years, it might be kept as it is; and instead of shortening the hours of attendance, lengthen them. Of course it should be taken for granted that the school house is constructed for the accommodation of the poor children, and in this light it would be better that such children should spend most of the day in school houses having good sanitary conditions, rather than, as they now do, in tenement houses. Thus you would have these primary schools with plenty of air and light, which you can get in the upper story, and children would be glad to come early, and remain until three or four o'clock, or even later in the afternoon.

The doctor then read from his tables the results of his examinations, as follows:

The eyes of 1,440 students were examined. Of this number 630 were examined by Drs. Williams and West, of Cincinnati; 510 by Dr. Cheatham, of New York, and 300 by Drs. Mathewson and Prout, of Brooklyn. In Cincinnati the students examined were of the district, intermediate, and normal and high schools. In New York the students examined were connected with the New York College—the introductory classes, the Freshmen, Sophomores and Juniors. In Brooklyn, the academic and collegiate department of the Polytechnic Institute.

In all, or nearly all cases, the refraction was first determined by the use of the trial glass and correction glasses, and afterwards corrected by means of the ophthalmoscope.

The table from which I make the first quotation shows the result

of the examination of the 630 students in the district, intermediate, normal and high schools of Cincinnati. In the district school, 209 pupils were examined, of whom 83.5 per cent. were found to have what we call emmetropic eyes; of near-sighted the rate was ten per cent. In the intermediate schools 210 pupils were examined. This is a higher grade than the preceding. Of these 80 per cent. were emmetropic—you observe 3.5 per cent. less, and 14 per cent. were near-sighted—or four per cent. more than the rate in the district schools. In the normal and high schools 211 scholars were examined. Of these 78 per cent. were emmetropic and 16 per cent. myopic (or near-sighted), an increase, as you observe, of six per cent. over the district schools.

In the Introductory Class of the New York College, 57.5 per cent. were natural eyes and 29 per cent. were myopic. I leave out other abnormal influences, because we are now talking about near-sightedness. In the Freshman Class of this same college 42.5 per cent. were natural eyes and 40 per cent. were near-sighted. In the Sophomore Class (the class above) there is no very material change, the natural eye being 59.5 per cent. and the near-sighted 34.75.

There is an increase of from 29 per cent. to 40 per cent.—11 per cent. In the Junior Class there were, of natural eyes, 40 per cent., and of near-sightedness, 53 per cent.—an increase of from 29 per cent. in the Introductory Class to 53 per cent. in the Junior, or 24 per cent. Of course these were not the same persons. The examinations were made continuously, and in a comparatively brief space of time.

Table No. 3 shows the result of examinations of 300 students in the Polytechnic Institute in Brooklyn. In the academic department 56 per cent. were emmetropic or natural eyes, and 10 per cent. were near-sighted; in the collegiate, of 158 students examined, 53 per cent. were natural and 28.5 per cent. were myopic—nearly threefold greater than the students examined in Cincinnati.

Now while disease is going on in an organ so transparent as the eye, it is possible that during the same period of life damage is being done to other organs of the body which are not so transparent, and the morbid condition of which we cannot so easily determine as those of the eye. I think that before we get through with this examination, certain rules will be formulated by which parents at home will be able to apply the principles necessary to the care of their children much better than now. Also that school-rooms will be constructed much better than at the present day. It seems to me that the very etymology of the word education involves the idea that the young child is to be taken, and that he is to grow stronger and better, if all his organs, all the way up through that process of education until the wear and tear of life produces results which, of course, are to be expected, were equally and fully exercised in the right direction. Take a thousand children at six years of age, with properly regulated diet and management, at home and in the school house, as regards forms of desks and seats and light and heat and hours of study and school books, it seems to me that these thousand children ought to represent a higher type of life when they reach the age of twenty-five years than when first taken in hand to be educated. We certainly ought not to damage the eyes in the process of education; and I be-

lieve that the damage done to the eyes is to be taken as an indication of the damage done to other portions of the body.

Hereditary Influences.—Dr. McILVAINE inquired of Dr. Agnew how many generations it will take before school children of to-day will be absolutely blind?

In reply Dr. Agnew said there is always a tendency to reversion to the original type, but that he had not said that near-sightedness was hereditary. Alt, and others, did not observe that association; but we may safely say, so far as our present knowledge goes, that the tendency to near-sightedness is hereditary. But of course the general opinion that excessive study, with all the evils which surround it, like intemperance, if there were no correction of the evil, would soon obliterate the race.

Prof. HAMILTON emphasized attention to Dr. Agnew's remarks, and observed that the doctor had made two or three strong points. He has shown conclusively that the over-use of the eye is one of the most fruitful causes of short-sightedness. He has shown also, which every medical man will agree to, that it is a disease, an abnormal condition, and that it represents a disease or abnormal condition of the general system, as a rule. But in these tabulated statements there are many other points which are even more pertinent, in relation to which he has information which he will present at some future time.

More Room and Better Arrangements.—The question is not simply what number of schools have been examined, and if short-sightedness is found in what grade, but the number of cubic feet of air which is allotted to each seat, the method of heating, method of ventilation, how many windows to the right, how many to the left, and numerous other questions which are embodied in these tables, imply that there are certain causes incident to the construction of school houses and their general management which have great influence in the production of short-sightedness.

I would like to ask Dr. Agnew a few categorical questions: Whether many or any of these tables have been summarized to such a degree that they may furnish information on these points?

DR. AGNEW. They have not yet been summarized.

PROF. HAMILTON. How many hours, aggregated, are the children allowed for enjoyment, and how many for study?

DR. AGNEW had not summarized the tables sufficiently to furnish definite information on the points raised.

DR. O'SULLIVAN being called upon by the Chairman, said that it might be well to say a word or so in regard to the suggestion thrown out by Dr. Agnew as to the future school house, with an ampler "playground" in the upper story, and with everything with which to enjoy themselves, with the advantage of an abundant supply of light. He agreed with Dr. Agnew in regard to the sanitary advantages of such a system. He thought Dr. Agnew would agree with him, however, that it is not well to keep children in the school house many hours a day, as the school houses are at present arranged and managed. For instance, there is a school in one of the most densely populated sections of the city—in the tenth ward—where there are, on an average, about 1,600 children in the primary department, where rooms are so dark that the blackboard exercises could not be distinguished by the eye, and the

gallery classes so crowded that there is scarcely room to move. They had but one intermission in the morning and that of but twenty minutes in duration; and they had not even that until he called the attention of the Board to the subject. It would be accounted cruelty to animals to keep them under such unsanitary conditions; how much more is it cruelty to children to keep them there for any length of time; and it is for the purpose of suggesting some simple method of remedying this state of things that we refer to the subject in our report.

The remedy suggested by some is to make larger school houses. But a school building costs from one hundred to one hundred and forty, and even to two hundred thousand dollars. What we desire will cost very little in comparison to this amount, if we can get a more frequent recess, and if the age of admission shall be changed to a more suitable period, as well as the other improvements suggested in the report.

But whether we have a compulsory law or not, we desire to have, in addition to its enforcement, a law requiring School Boards to furnish sufficient room for the pupils, and also to furnish proper sanitary supervision. That is reasonable and proper. If we could have but one session per day for those little ones from five to eight years of age, with frequent intermissions, the children would be better in health and in every other respect.

The points which he desired to impress, without entering into a discussion of the subject, were short sessions in the lower grades; one session per day for children under eight years of age; that the School Board be required to place schools in a proper sanitary condition, and that they be placed under proper medical supervision.

(To be continued.)

———o———

Watch the Children's Feet.—The following advice from the New York *Evening Post* is very important.

"Life-long discomfort and sudden death often come to children through the inattention or carelessness of the parents. A child should never be allowed to go to sleep with cold feet; the thing to be last attended to is to see that the feet are dry and warm. Neglect of this has often led to a dangerous attack of croup, diphtheria, or a fatal sore throat. Always on coming from school, on entering the house from a visit or errand in rainy, muddy, or thawy weather, the child should remove its shoes, and the mother should herself ascertain whether the stockings are the least damp. If they are, they should be taken off, the feet held before the fire and rubbed with the hands till perfectly dry, and another pair of stockings and another pair of shoes put on. The reserve shoes and stockings should be kept where they are good and dry, so as to be ready for use on a minute's notice."

CONSERVATIVE MEDICINE AND THE MISSION OF THE SANITARIAN.

The higher duty of the physician, says the author of the opening article in THE SANITARIAN for January, "is to do all in his power to prevent as well as remove disease." This conclusion is based upon the history and purposes of medical art, as well as upon the clear judgment and experience of the faithful physician here quoted, and it happily defines the mission of THE SANITARIAN.

The onward course of scientific discovery, and the beneficent outcome of the progress in medical knowledge, have been predicted by great minds for a long time before the fruits of such discovery and advancement gave form to sanitary science. "Who can doubt," asked the Secretary of the French Academy, Ceudorcet, eighty years ago, "that the progress of *conservative medicine*, the use of healthy aliment and lodging, a regimen which will develop energy by exercise, without wasting it by excess, and the removal of the most potent causes of degradation, will prolong the life-time of men, and insure more constant health and more robust constitutions? . . Conservative medicine must, in the long run, banish transmissible and contagious diseases, as well as maladies due to climate, diet, occupation; nay, the hope of relief may be extended to all other diseases whose remote causes may probably be recognized."* These predictions of a masterly genius, when under the ban of proscription in a crisis of human history, are no longer doubted. The progress and triumphs of *conservative medicine*—practical hygiene—during the past few years, warrants greater results than have been promised by the cultivators of medical knowledge.

Numerous departments of physical knowledge which are steadily advancing and mutually combining their latest scientific conclusions, are imparting a comprehensive and well defined value to hygiene, both as respects its personal and domestic, and its public or governmental applications, and so important is it that in each department of science on which the practical advances of hygiene depend there shall be steady progress, it may be useful for us occasionally to turn to the public health reports, the leading medical publications and the journals of sanitary science, to find fresh replies to the questions which most concern practical hygiene.

Turning to the pages of THE SANITARIAN, which now comprise monthly issues for four years, the purposes which were announced in its prospectus in 1873 seem to have been well maintained. Certainly this is true as respects the "chief object—to awaken public attention to the extent of the field and also enlarge the resources of sanitary science." Among the many contributions whose titles are noted in the indexes of the journal, the following have added important facts to the stock of sanitary knowledge. Nearly a score of papers and reports on sanitary drainage, and as many more on house drainage and scavenging; several papers and discussions relating to dis-

*Translation by Dr. Farr, from the *Posthumous Works of Ceudorcet.*

infection and cleansing; the several contributions from medical officers of the navy, notably those on ventilation, yellow fever, drainage and malaria; the numerous papers on school hygiene and effects of school life on the bodily faculties; excellent papers on infant-feeding and the nutrition and nursing of children; the papers on preventive measures, preventable diseases, sanitary duties and State medicine, and the current record of sanitary progress and the monthly review of vital statistics of cities; these have been especially serviceable to the readers of THE SANITARIAN, and to the popular uses of sanitary knowledge.

In the fields of physiology and pathology certainly hygiene must patiently wait on the successive developments in them, yet the students of *causation* and *prevention* are at last co-operating with those who study the *processes and pathological histology* of disease, and the relations of healthy life and functions in the various parts of the human organism. Conservative medicine, or hygiene, shares, equally with curative medicine, all fruits from these fields of scientific research. The nature and processes of destructive diseases and the deteriorations in the human family, even when constitutional and entailed, hold relations so intimate with hygienic conditions, and the problems of preventive or conservative medicine, that in respect of such maladies, the deductions of preventive and conservative medicine are more definite and valuable than those relating to curative art. What has the *germ* theory to do with pathology and with sanitary science, seems a less important question than the inquiry, What are the discoverable processes of destructive diseases, and what the preventable circumstances and agencies which contribute to them? While Klein, during the past three years, seems to have fairly demonstrated the causation of enteric fever to be directly dependent upon the invasion of the intestinal canal by germinal matter, which, in its very development and amazingly rapid propagation, attacks and permeates the tissues, the researches in regard to tuberculosis and cancer and rheum, in regard to the processes of infection in certain typical fevers and inflammations, as studied by the scientific corps under the late Medical Officer of the Privy Council, in England, are proved to depend upon agencies entirely diverse from that which has been revealed in enteric fever and relapsing fever. Yet all alike, and in various respects, have definite relations to physical circumstances, which are within the domain and control of hygiene. These advancing demonstrations in etiology and the histological processes of disease, might be summarized from time to time for the encouragement and real support they give to sanitary works. The enlargement of the scientific resources of hygiene waits on the progress of pathological as well as of chemical and physiological knowledge. The leading workers in the service of conservative medicine and the public health, view with regret the recent embarrassment and partial suspension of the scientific inquiries which the Medical Officer of the Privy Council of England has for years been conducting with able assistants. The public health interests in our own country require that the scientific works now in progress in the Army and Navy medical service, and in the few State and municipal Boards of Health which have organized useful investigations, shall not be crippled by

partisan interference and the withholding of necessary means. THE SANITARIAN may do great service to sanitary science and to mankind by promoting a popular knowledge of the utility of such scientific work.

The geography and topography of diseases, especially of such as are regarded as endemic or epidemic, need to be systematically reported to some central office in every State, or to a single office for the whole nation. The chronology of such outbreaks of spreading diseases, the statistics of the mortality they cause, and of the essential facts concerning sickness and local circumstances in communities so afflicted, could be briefly furnished to the readers of THE SANITARIAN, greatly to the advantage of human welfare. As one of the readers of this journal, the writer begs leave to suggest and urge that such brief records of endemic and epidemic diseases be furnished to the public through this monthly.

The mission of sanitary science is so practical and beneficent, that its promulgations need offer no apology for their zeal or their personal sacrifices in its service. THE SANITARIAN, in pursuing this mission, may justly expect the zealous and spontaneous support of the true promoters of sanitary improvement, and all the more certainly and abundantly will this support be forthcoming, as scientific problems find opportunity for a clear statement upon all points in sanitary science and practice.

ELISHA HARRIS, M.D

New York, Feb. 1, 1877.

———o———

Prize in Industrial Hygiene.—An offer of a medal in connection with this subject has been made by Mr. Benjamin Shaw, and has been gratefully accepted by the Council of the Society of Arts, London. The medal will be of the value of £20, and will be awarded every fifth year. Mr. Shaw has transferred into the name of the society, a sufficient amount of consols for the purpose. The terms of the offer are as follows: "For any discovery, invention, or newly devised methods for obviating or materially diminishing any risk to life, limb, or health, incidental to any industrial occupation, and not previously capable of being so obviated or diminished by any known and practically available means." The first award will be made in May, 1877. Parties desiring to compete for the above prize should communicate with the Secretary of the Society of Arts. A full description of the invention or process must be given, illustrated, if necessary, by models, drawings, specimens, etc. When the invention or process is in actual work, it is desirable that this should be stated, so that the committee may, if they think proper, have the opportunity of examining it. The council reserve to themselves the right of withholding the prize, in the event of nothing of sufficient merit being sent in for competition. The latest date for receiving communications will be March 31, 1877. In case a sufficient number of objects are sent in for competition, the council will make arrangements to exhibit them, or a selection from them, to the public.

LIFE INSURANCE COMPANIES.

A RECORD OF LOSS DISBURSEMENTS BY THE COMPANIES BELONGING TO THE

CHAMBER OF LIFE INSURANCE,

Showing the aggregate monthly payments of policy claims by Companies belonging to the Chamber of Life Insurance, beginning April, 1874:

MONTH.	No. of Co's.	Death Claims.	Endowment Claims.	Total.
April, 1874	26	$1,475,377.88	$55,168.13	$1,530,546.01
May, 1874	26	1,572,414.16	57,766.89	1,630,181.05
June, 1874	26	1,433,982.95	53,687.79	1,487,670.74
July, 1874	26	1,440,810.58	61,037.26	1,501,847.84
August, 1874	26	1,280,112.23	102,533.14	1,382,645.37
September, 1874	27	1,411,280.54	123,428.07	1,534,708.61
October, 1874	29	1,383,715.91	67,962.22	1,451,678.13
November, 1874	29	1,388,821.37	72,955.55	1,461,776.92
December, 1874	29	1,455,796.50	138,719.88	1,594,516.38
January, 1875	29	1,540,374.17	157,337.87	1,697,712.04
February, 1875	28	1,449,016.97	84,032.27	1,533,049.24
March, 1875	28	1,736,496.03	119,793.72	1,856,289.75
April, 1875	28	1,746,847.05	82,272.28	1,829,119.33
May, 1875	27	1,760,508.50	95,450.71	1,855,959.21
June, 1875	27	1,815,900.21	111,576.68	1,927,476.89
July, 1875	27	1,633,134.38	114,140.45	1,747,274.83
August, 1875	27	1,691,067.20	129,009.54	1,820,076.74
September, 1875	27	1,602,158.70	157,673.36	1,759,832.06
October, 1875	27	1,401,150.56	220,064.39	1,621,214.95
November, 1875	27	1,489,134.52	155,842.55	1,644,977.07
December, 1875	27	1,496,311.25	221,148.66	1,717,459.91
January, 1876	26	1,473,563.70	186,197.51	1,659,761.21
February, 1876	27	1,535,607.35	286,797.40	1,822,404.75
March, 1876	27	1,449,369.25	201,176.99	1,650,546.24
April, 1876	27	1,508,463.15	150,204.10	1,658,667.25
May, 1876	27	1,606,974.86	221,318.85	1,828,293.71
June, 1876	27	1,678,396.39	244,999.73	1,923,396.12
July, 1876	27	1,438,780.51	211,689.80	1,650,470.31
August, 1876	27	1,520,828.83	237,618.06	1,758,446.89
September, 1876	27	1,566,804.68	182,994.82	1,749,799.50
October, 1876	26	1,440,134.45	248,798.40	1,688,932.85
November, 1876	26	1,482,055.14	226,635.36	1,708,690.50
December, 1876	24	1,407,478.93	306,350.03	1,713,828.96
Total, 33 months		$50,312,868.90	5,086,382.46	55,399,251.36

Expense is the first striking feature of Life Insurance as aggregated in the above record of disbursements, while it forms the best possible reply to a large class of croakers and self-constituted judges on the legitimate expenses of conducting the business; they look with a single eye to the benefits which ought, in their judgment, to accrue to the insured, wholly regardless of the necessary requirements connected with its successful prosecution.

"Professors," and other learned persons who very possibly may possess considerable mathematical knowledge, and have a general acquaintance with the theory of the business, have produced many elaborate essays upon Life Insurance, demonstrating (very clearly to themselves, no doubt) that the "reckless extravagance of the busi-

ness managers of Life Insurance" is not only highly improper, but altogether unnecessary.

It is true that the commissions paid to agents, which are by far the heaviest item of expenses in conducting Life Insurance, were at one time very much less than they are now. It is also true that the salaries paid to officers and clerks, as well as every item of expenditure necessary to the transaction of the business, have also, within the last dozen years, been materially increased, not even excepting these learned critics themselves. Their own "penny a line" contributions to the "Glaring Life Insurance Abuses," generally aimed at the most successful companies, while they strive to uphold cheap concerns, which pretend to command the best talent without paying for it, are no exception.

They forget, or else they never knew, that the same general influences which have affected mercantile affairs and enhanced the cost of living during the last fifteen years have also been at work in the business of Life Insurance, and we fail to see any just reason why exemption from the general laws affecting commerce and labor should be expected in favor of this particular business. During the war, and as a consequence of it, everything advanced in price, and notably the wages of labor of all kinds—not alone that required in the production of the materials of war, but of all classes of labor, from that of the domestic servant to the bank president. It may properly be said that this was the result of a *natural law*, is consonant with all experience, and was absolutely unavoidable. Be it so; the social disorganization that would have resulted from any general attempt to impede the operation of this law would have resulted in worse calamities than the war itself, and would in the end have proved utterly futile. The absurd proposition to reduce the cost of Life Insurance by revising the tables of mortality is scarcely less ridiculous than would be an attempt to do so by a statutory interference with the wages of the labor necessary to carry on the business.

Life Insurance, like other businesses, received a remarkable stimulus in the "flush times" during and succeeding the war, and did so from precisely the same causes. But does any one suppose that if the wages of labor appropriate to any particular occupation, such as shoe-making or stone-cutting, had been persistently maintained during and subsequent to the war at *ante bellum* rates, that such occupation would have been carried on with anything like the energy it would have been, had the remuneration of the laborer kept pace with that accorded in other fields, and with the necessities of the times? And so of Life Insurance it may with equal propriety be asked, Does any one suppose that if the commission paid to agents had been persistently retained at the old standard of ten per cent. upon original premiums, and five per cent. upon renewals, that Life Insurance would, as a business—or rather, let us say, as a *blessing*—have attained the dimensions it has at the present day? Life Insurance has progressed, become popular, and its benefits so preached and illustrated as to become a *necessity*, more from the fact that people made money by it than from any other cause. This is the plain English of the matter, and any attempt to eliminate it, in view of its *quasi* benevolent character, from the operation of the ordinary laws governing commercial enterprises, or to interfere unduly in its management by

statute, in recognition of a few villainous quacks who have disgraced themselves and injured the business, will inevitably result in its serious detriment.

To the necessity created for increased income in consequence of the enhanced cost of living, *competition* added its additional influence to increase the pay of the competent and successful caterer for life risks, and thus the cost of Life Insurance to the policy-holder was still further increased by the operation of another natural law, which no amount of theoretical reasoning could or can resist.

As regards the incomes of the managers of the companies, it must be conceded that these gentlemen are not, as a rule, compensated disproportionately to their length of service, zeal and ability. Indeed, it is very probable that if they had devoted themselves to other pursuits with the same energy and assiduity, they would have achieved at least equal pecuniary success. It will not be contended that the business of Life Insurance requires less intelligence, energy or ability in its conduct than most other occupations. On the contrary, through its well conducted instrumentality, hundreds upon hundreds of helpless widows and orphans are annually saved from degradation and want, and placed or retained in comfort, and in the esteem of their respective circles of friends. There really seems, therefore, to be no valid reason why those engaged in this business should, on any reasonable plea, be excluded from the chances and advantages which are conceded to be allowable and proper in any other reputable calling.

It is fortunate that Life Insurance has not been otherwise; that it has afforded scope for the best energy and talent of the man of business, and that its success is so triumphant in the aggregate, as to expose the veritable quacks in this as in other reputable occupations, who enter upon it as "Cheap Johns," with no higher purpose than to feather their own nests by shifting alliases, and fleecing those who habitually underestimate the value of all labor but their own.

———o———

The probabilities of living to be 100 years old are, according to the statistics of Dr. Farr, 223 to the 1,000,000. That is to say, computing the present average number of deaths on the basis of recent official tables of mortality in England, out of every 1,000,000 now living, 223 will live to be 100 years old; and the last one of the million will die in his 108th year.

The longest-lived people, according to the *Jewish Chronicle*, are the Jews. Among them, it remarks, "Hereditary disease is very rare; scrofula is scarcely to be found, their freedom from intermarriages preserving the initial purity of their blood. Their exemption from infection in such scourges as typhus, cholera, the plague, has often been remarked, but it is attributable to the scrupulousness with which the vast majority attend to the hygienic prescriptions of their ritual. The average length of life exceeds that of their Christian contemporaries by five years, a fact to be recommended to the notice of Life Insurance Companies. In addition to the favoring conditions already mentioned, this may be in part due to their predilection for such trades and professions as are not dangerous, and which permit the strict observance of their religious laws. Innkeepers, bakers, miners are scarcely to be found among the English Hebrews."

Editor's Table.

THE BILL FOR A STATE BOARD OF HEALTH FOR NEW YORK, AND SOME OF THE REASONS FOR IT.

The following is the Bill introduced into the Assembly by Hon. JOHN MCGROARTY. It embodies the suggestions of the Standing Committee on Hygiene of the New York State Medical Society, in conjunction with the most effectual practical measures of other States which have State Boards of Health.

SECTION 1.—That the Governor, by and with the advice and consent of the Senate, shall appoint eight persons, one from each judicial district in the State, five of whom shall be physicians of good standing in their profession and of not less than ten years' professional experience, who, with the Health Officer of the Port of New York, the President of the Board of Health of New York, and the President of the Board of Health of Brooklyn, shall constitute the State Board of Health. Of the eight persons first appointed, two shall serve for two years, two for four years, two for six years, and two for eight years, from the first day of April next following their confirmation; and the Governor shall hereafter biennially appoint, by and with the advice and consent of the Senate, two members of said State Board of Health, to hold their offices for eight years from the first day of April next following their confirmation and until their successors are appointed, excepting the Secretary, who shall continue in office as hereinafter provided. Any vacancy in said Board occurring during the recess of the Legislature shall be filled by the Governor until the next regular session of the same.

SEC. 2.—That the State Board of Health shall meet at least once in every three months, and as much oftener as they may deem necessary, their first meeting being held within two weeks after the first of April in each year, and six members shall always constitute a quorum for business. No member of the Board shall receive any compensation, excepting the Secretary, but the actual traveling and other expenses of the members while engaged in the duties of the Board shall be allowed and paid out of the appropriation made for its support. They shall select, annually, one member of the Board to be President, and one of the medical members to be their permanent Secretary and executive officer, who shall hold his office so long as he shall faithfully discharge the duties thereof, but who may be removed for cause at any meeting of the Board, a majority of the members voting therefor.

SEC. 3.—That the Secretary shall keep a record of the acts and proceedings of the Board, perform and superintend the work prescribed in this act, and such other duties as the Board may order under their general direction, and shall receive an annual salary of $3,500, which shall be paid him in the same manner as the salaries

of other State officers are paid, and such necessary expenses as the Comptroller of the Treasury shall audit, on the presentation of an itemized account, with vouchers annexed and the certificate of the Board, shall be allowed him.

SEC. 4.—That the said State Board of Health shall take cognizance of the interests of health and life among the people of this State; they shall make sanitary investigations, and inquiries respecting the causes of disease, and especially of epidemics, the sources of mortality and the effects of local conditions, employments, habits, ingesta and other circumstances upon the public health, and they shall collect such information in respect of these matters as may be useful in the discharge of their duties, and contribute to the promotion of health and the protection of life in the State; they shall cause to be made, by their Secretary or by a Committee of the Board, regular inspections at such times as they may deem best, and special inspections, whenever directed by the Governor or the Legislature, of all public hospitals, prisons, asylums, or other public institutions, in regard to the location, drainage, water supply, disposal of excreta, heating and ventilation, and other circumstances in any way affecting the health of their inmates, and shall also suggest such remedies as they may consider suitable for the removal of all conditions detrimental to health in any such institutions, in writing, to the officers thereof.

SEC. 5.—That the said Board shall cause all sanitary information in its possession to be promptly forwarded to the local health authorities of all cities, villages, towns or counties in the State, such useful suggestions as the information and experience of said Board may supply. And it is also hereby made the duty of such said local health authorities to supply the like information and suggestions to said State Board of Health, together with copies of all their reports and other publications. And said Board of Health is authorized to require reports and information (at such times and of such facts, and generally of such nature and extent, relating to the safety of life and promotion of health, as its by-laws or rules may provide), from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals and officers thereof; and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees and occupants of all places of public resort in the State; but such reports and information shall only be required concerning matters or particulars in respect of which the Board may need information for the proper discharge of its duties. Said Board shall, when requested by public authorities, or when they deem it best, advise officers of the State, county or local government, in regard to sanitary drainage, and the location, drainage, ventilation and sanitary provisions of any public institution, building or public place.

SEC. 6.—That it shall be the duty of the said State Board of Health to give all information that may be reasonably requested, concerning any threatened danger to the public health, to the local health officers, and all other sanitary authorities in the State, which said local health officers and other sanitary authorities are hereby required, in like manner, to give the like information to said Board; and said Board and said officers and said sanitary authorities shall, so far as

legal and practicable, co-operate to prevent the spread of disease, and for the protection of life and the promotion of health, within the sphere of their respective duties.

SEC. 7.—That said Board may, from time to time, engage suitable persons to render sanitary service, and to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relative thereto. And it is hereby made the duty of all boards, officers and agents having the control, charge or custody of any public structure, work, ground or erection, or of any plan, description, outlines, drawings or charts thereof, or relating thereto, made, kept or controlled under any public authority, to permit and facilitate the examination and inspection, and the making of copies of the same by any officer or person by said Board authorized; and the members of said Board, and such other officer or person as may at any time be by said Board authorized, may, without fee or hindrance, enter, examine and survey all such grounds, erections, vehicles, structures, apartments, buildings and places.

SEC. 8.—That it shall be the duty of the State Board of Health to have the general supervision of the State system of registration of births, marriages and deaths. Said Board shall prepare the necessary methods and forms for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties and in the central bureau of vital statistics at the capital of the State. The said Board of Health shall recommend such forms and amendments of law as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the State. The Secretary of said Board of Health shall be the superintendent of registration of vital statistics. As supervised by the said Board, the clerical duties and safe-keeping of the bureau of vital statistics thus created shall be provided for by the comptroller of the State, who shall also provide and furnish such apartments and stationery as said Board shall require in the discharge of its duties at the capital of the State.

SEC. 9.—That the said Board, on or before the first day of January in each year, shall make a report in writing to the Governor, upon the vital statistics and the sanitary condition and prospects of the State, which report shall also set forth the action of said Board, and of its officers and agents, and the names thereof for the past year; and shall contain a full statement of their acts, investigations and discoveries, with such suggestions for further legislative action or other precautions as they may deem proper for the better protection of life and health. This report shall also contain a detailed statement of the moneys expended by said Board, and the manner of their expenditure during the year for which it is made; but the total amount paid for the expenses of this Board, including the salary and expenses of the Secretary, shall not exceed $10,000, which amount is hereby annually appropriated for this purpose, to be paid by the Treasurer, on the Comptroller's warrant, in such sums as the certificate of the Board, with proper vouchers annexed, may certify from time to time.

SEC. 10.—That this act shall take effect from the date of its passage;

and that all acts, or parts of acts, inconsistent herewith be, and the same are, hereby repealed.

The local and public causes of destructive diseases which strike down the most valued classes of inhabitants, as well as the poor and those who are least protected, because unnoticed, are every year endangering the loss of lives which the State should protect and save by the practical application of sanitary knowledge for the prevention of such causes of disease and mortality. In the State of Massachusetts the eminent financier and economist, Hon. Mr. Plunkett, stated, after a few years' operations of the State Board of Health, that in single large villages, the saving of life and health by agencies exerted by that Board had been worth more in cash than the entire annual expenses of the Board.

During the census year of 1870, New York, with a population of 4,382,759, had a recorded mortality of 69,095; and that number is, with good reason, believed to be considerably less than the actual mortality, because this State has no system of general registration of deaths. In the total record of mortality, 17,596 deaths (25.46 per cent.) were caused by zymotic diseases, which are the most preventable of disorders, and comprehending 6,930 deaths from diarrhœal diseases; 3,403 from scarlet fever; 2,029 from typhoid fever, and 864 from diphtheria, a disease which has so increased in prevalence since 1870, as, in 1875, to have destroyed not less than 4,000 lives.

Of the other causes of mortality—namely, the remaining three-fourths—11,598 died of consumption, and 8,458 from other diseases of the respiratory organs—and these diseases are largely dependent upon preventable causes, as well as the zymotic diseases. 2,664 deaths resulted from violence: burns, scalds, drowning, suffocation, explosions, "accidents," etc., etc., in the main due to the want of intelligently directed public measures for their prevention. Taking all together, of the total number 69,095 deaths from all causes, 53,902 from the eight categories above given are in large measure preventable by well recognized sanitary measures, such as no less than twelve States of the Union have established during the past few years.

Again, that this waste of life may be made still more apparent: of the total number of deaths, 69,095, for the year, 31,602 were of infants and children under 15 years of age; and of these 27,071 were under five years of age. That the loss in pecuniary value to the State from these 31,602 premature deaths may be duly appreciated, it is only necessary to remark that the cost of their sustenance from birth to death was a total loss—they died without living long enough to render any material return for the cost, and to this is to be added the expense of sickness and burial. By assuming that the average life-

time of the whole 31,602 infants and children was only five years, and that the cost of this five years' sustenance, sickness and burial was only $200 each, we have in this item a dead loss from premature deaths of children, $6,320,400.

Again, of the deaths enumerated for the year under zymotic diseases, 2,029 were caused by typhoid fever, a disease which kills most of its victims in the prime of life, at a time when the individual is of the most value to his family and the State. The average value of lives taken by typhoid fever (of both sexes), at a moderate estimate, is not less than $1,500 each. The loss to the people from this cause, therefore, amounts to over $3,000,000 annually—for there is no question that considerably over 2,000 deaths from typhoid fever have occurred annually in the State for many years, and of all the diseases enumerated, typhoid fever is well known to be entirely preventable by sanitary measures.

The more closely unsanitary conditions are examined, the more extensive do their ramifications appear, and in whatever degree the duration of life is diminished, in the same degree so much productive power is lost. And every community is poor and powerless in the inverse ratio to its standard average duration of life and health. Every death under the age of twelve years at least carries with it a positive loss to the community in which the individual has lived, because, previous to that age, sustenance involves a direct outlay, and if the life of the individual is preserved, a productive member of society is added and remuneration rendered. And as regards adults—if the probabilities of life in any community are so low as to give the average adult age at death below the ripe maturity of life, the proportion of widowhood and orphanage is increased, and the productive members of society are proportionately burdened, and thus it is that burdens are created and costs entailed upon the industrious survivors of every community in direct ratio with a high mortality.

Such are, in brief, some of the considerations which appeal to the most enlightened sense of the Legislature, in the interest of human health and life, and in the most catholic spirit; in the way of which, no narrow-minded sectional discords or local jealousies should for a moment be tolerated, against this much needed measure.

The Public Health.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,070,276—4 wks. end'g Jan. 20.	709	1,830	22.22	61		72	101	4	40	12	13	2	29	35	326	354
" Year 1876	14,208	29,152	27.23	1453	315	1750	891	362	527	406	283	20	343	3782	4194	3756
Philadelphia, 825,500—3 wks. end'g Jan. 27	252	819	17.19	16	22	27	16	1	17	4	38		6	4	155	93
Brooklyn, 506,000—4 wks. end'g Jan. 27.	339	796	19.63			77	53			16	8	1	16	6	124	116
St. Louis, 498,000—5 wks. end'g Feb. 3.	183	550	11.48	32		13	3		9	7	11	1	4	8	75	139
Chicago, 420,000—5 wks. end'g Feb. 3.	438	816	20.19	22		60	176		33		8		7	7	67	82
Baltimore, 350,000—5 wks. end'g Feb. 3.	306	680	20.2	12		18	90	20	10	12	15		7	6	100	66
" Year 1876	3600	7382	21.09	220		146	492	6	101	33	184	6	25	949	1115	627
Boston, 352,000—4 wks. end'g Jan. 27.	192	505	18.65	24	1	35	25		11	7	4		1	6	92	65
Cincinnati, 265,000—4 weeks end'g Jan. 27.	108	336	15.64	10	11	10		1	6	4	13		36	9	61	116
San Francisco, 275,000—month of Dec.	211	607	26.48	24	32	110	3		15	2	33		3	7	60	74
New Orleans, 210,000—2 mo. end'g Jan. 31.	285	1231	35.17	33	220	12	3	7	9		12	1	6	52	154	82
Washington, 160,000—3 mo. end'g Dec. 31.	68	883	22.07	22	2	15	27		17	7	24		7	23	159	117
Pittsburgh, 152,000—month of Jan..	118	283	20.30		44	10	10	12	10		4		3	4	23	56
Newark, 126,000																
Providence, 103,000—month of Jan.	45	153	17.8	7		14	3		5		3			2	21	25
Milwaukee, 100,781—month of Jan.	107	201	23.93	3	30	11	27			1	3	1	4	3	13	17
Rochester, 70,000																
Richmond, 72,500—5 wks. end'g Feb. 3.	58	149	21.35	9		2			2	2	1			6	31	22
New Haven, 60,000—month of Jan.	27	96	19.2	2		3	4		2		3		1	1	18	9
Charleston, 57,000—3 wks. end'g Jan. 27.	17	70	21.28													
Toledo, 50,000—month of Dec.	21	52	12.48	6		1	1	2	2		1				8	4
Mobile, 40,000—month of Dec.	20	94	28.02	10	2	1			1		3			2	12	24
Dayton, 36,000—month of Jan.	16	41	13.66	2					1						8	12
Nashville, 27,000—month of Jan.	30	69	32.61	1		13			4		1		4		12	10
Wheeling, 28,000—Year 1876.	293	611	21.35	23	2	7	67	25	2	6	31		10	61	53	78
Buffalo, 170,000—month of Jan.	51	163	11.57	8		1			1		8		1	3	34	18
Knoxville, 13,000—Year 1876.	71	168	12.92	7					2		4	1		15	42	22
Paterson, 39,000—month of Jan.	33	72	22.15	2		4	2		7						11	10
Petersburg, 20,000—4 wks. end'g Jan. 27.	9	30	19.5	4					2					1		5
Lansing, 8,400																
Selma, 8,000—month of Jan.	6	16	24.00												4	4
" Year 1876		167	16.87													
Elmira, 20,000																
Hudson Co., N. J., 170,859																
Yonkers, 17,500—month of Jan.	7	21	14.4				1			1		1			3	5
Memphis, 45,000—month of Jan.	37	115	30.66	4		3	7		1			1	6	14	33	

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—•—

Foreign Health Statistics.—United Kingdom of Great Britain, during three weeks ending December 30th, 16,538 births and 10,554 deaths were registered in London and twenty other large towns, and the natural increase of the population was 5,984. The mortality from all causes was, per 1,000—in London, 22.33; Edinburgh, 22; Glasgow, 24.33; Dublin, 24.66; Portsmouth, 17.33; Norwich, 19.66; Wolverhampton, 24; Sunderland, 28.33; Sheffield, 19.66; Birmingham, 19.33; Bristol, 19; Liverpool, 27.66; Salford, 26.66; Oldham, 28.33; Bradford, 25; Leeds, 24.66; Hull, 22.66; Newcastle-upon-Tyne, 27; Leicester, 23; Manchester, 26.33; Nottingham, 21. Other foreign cities at most recent dates per 1,000:

Paris, 27; Rome, 26; Vienna, 27; Brussels, 21; Berlin, 24; Hamburg, 25; Calcutta, 39; Bombay, 26; Madras, 36; Amsterdam, 26; Rotterdam, 22; The Hague, 23; Christiana, 17; Breslau, 27; Buda-Pesth, 38; Turin, 22; Alexandria, 47; Copenhagen, 26; Munich, 36; Naples, 28.

Philadelphia's record for 1875[1] shows an increase of mortality considerably out of proportion to her increase of population for the two years last preceding, chiefly due to an increase of zymotic diseases. Total mortality from all causes, 17,805, annual death-rate per 1,000, 22.25. Still, however, lower than that of any other city of equal population for the same year, and favorable as compared with six other American cities of over 300,000 inhabitants each.* Of the total number of deaths, 7,371 were of infants under five years of age. From zymotic causes, 4,581, an increase of 1,558 over the year 1874, and more than for any year of the last preceding eight years, except 1871 and 1872, when the small-pox prevailed. The especially fatal zymotic diseases for 1875 were: scarlet fever, 1,032; cholera infantum, 992; diphtheria, 656; croup, 428; typhoid fever, 420. Of the rest, the largest number wa , from whooping cough, 125. Consumption, 2,359; of other diseases of the respiratory organs, 1,941.

Births for the year, exclusive of 824 still-births, 17,933, a decrease of 1,454, as compared with 1874; but an excess of 1,527 over the average annual number for the last fourteen years. Exclusive of still-births, the birth-rate to population was 21.38 per 1,000.

Marriages, 6,144, also less numerous than the year before by 495, and less than any year since 1867, being only 7.65 per 1,000 of population, and the smallest since 1861.

The Progress of Sanitary Work is particularly marked by the completion of the West Philadelphia Stock Yards and Abattoir, which "embraces all the improvements that modern science has developed, and for neatness, convenience and safety is not surpassed in this or in any other country." The slaughtering floor has a capacity for killing and dressing 1,200 oxen daily, and is provided with a plenary supply of both hot and cold water, and every appurtenance necessary for the most exemplary cleanliness and comfort. Not the least interesting feature of the establishment is the provision for tallow rendering and the utilization of refuse, said to be provided with the most improved apparatus and machinery hitherto adapted to this purpose; and all under such management as, thus far, to have won the most unqualified approbation of the health authorities.

Disinfecting Chambers, in connection with the Municipal Hospital, now completed in Philadelphia, constitute another important step in the progress of sanitary work well worthy of imitation by other American cities. "The introduction of the disinfecting apparatus supplies a want that has long been a source of embarrassment. Not only is such an establishment needed for the proper treatment of the clothing of patients, and articles in use at the hospital, which cannot be thoroughly disinfected by the ordinary process of washing; but it is also of great service in the management of clothing, beds, bedding, etc., sent to the hospital for the express purpose of disinfection. Heretofore it has been necessary to burn many articles which might otherwise have been preserved and returned."

Heat has long been known as among the most efficient of disinfectants. And the use of steam, as a facile means of communicating it, against yellow fever

[1] Report of the Board of Health for the year 1875.

*New York, 29.35; Boston, 26.18; Brooklyn, 24.94; *Philadelphia*, 22.25; Baltimore, 20.90; Chicago, 18.80; St. Louis, 16.50.

especially, was effectually demonstrated as long ago as 1848.* Since that time, in addition to the common use of steam for the disinfection of vessels, it has been extensively used for the disinfection of personal clothing and bedding, and to this end steam disinfecting chambers, abroad, at least, have long since ceased to be a novelty. The first one constructed in this country was in connection with the New York Quarantine hospitals, where it continues to be a prominent feature.

Public Baths are recommended as a more and more urgent need; and entire prohibition of intramural interments, a pernicious practice which still obtains in Philadelphia, in conformity "with certain endowed rights and privileges, which are now the great obstacles in the way of its abandonment." During the year there were 3,487 such burials, besides those temporarily placed in receiving vaults.

Water Supply.—The "opinion is unanimous that 'the discharge from the breweries and the sewage in the vicinity of the Spring Garden Water-works should receive immediate attention.' Especially in the dry season is the danger from this source of contamination of a very threatening character": abundantly suggestive of the increased prevalence of typhoid fever and other zymotic diseases.

Inefficient street-cleaning and surface drainage are aggregate nuisances of great magnitude, in addition to the thousands of smaller ones, calling for a better division of labor.

Efficient sanitary administration "in a city having 143,000 dwellings," without an organized corps of competent sanitary inspectors, is hardly possible; and good as the reputation of Philadelphia for healthfulness has hitherto been, there is too much reason to fear that, in the face of this honest and lucid report, her reputation is now in jeopardy by the backwardness of the civil authorities in the race for the mastery with palpable unsanitary conditions.

The Maryland State Board of Health,[1] which has now been in existence nearly three years, is greatly embarrassed and ineffective for the want of mandatory powers. Its work, therefore, has been almost exclusively restricted to collecting information through voluntary assistance. "Outside of Baltimore city," the Secretary remarks, "there is no properly organized health board, in most of the counties not even the semblance of one," Baltimore alone being the only section of the State where there is in operation any effective measure for collecting vital statistics.

The Secretary, Dr. E. Lloyd Howard, strongly urges, showing with cited examples, the necessity of widening the field of State Medicine in conjunction with the State Board. Dr. Charles M. Ellis, member of the Board, contributes two special reports. First: on *Sanitary Legislation for Maryland*, rehearsing the progress and benefits of State Medicine as applied to other communities, and urging such amendatory enactments, as will make the State Board effective in promoting the organization of boards of health throughout the State, for the prevention of zymotic diseases, and the maintenance of civic cleanliness.

Second: on *Vital Registration for Maryland*, in which he summarizes the benefits of vital and disease statistics to every community and to the State at large; urging in conclusion the adoption of a system submitted by the Board by the Legislature, the general features of which are:

1. A Registrar of Vital Statistics is appointed by the County Commissioners

*Fourth National Sanitary and Quarantine Convention, Boston, 1860, p. 805. Transactions N. Y. State Medical Society, 1864, pp. 103–106; and 1868, pp. 91–98.

[1] First Biennial Report of the State Board of Health of Maryland, December, 1876. Pamphlet, pp. 106.

for each election district of the county.

2. The corporate authorities of cities appoint a medical man as Registrar, who shall be the Officer of Health, where such officer exists.

3. A County Superintendent of Vital Statistics is to be appointed by the County Commissioners for each county. He shall be a medical man, and nominated by the State Board of Health. He exercises local supervision over the Registrars of his county.

4. The Secretary of the State Board of Health is appointed State Superintendent of Vital Statistics, to whom all reports are made by the County Superintendents and City Registrars, and who exercises a general supervision over all officers of vital statistics in the State.

5. The Secretary of State is charged with the general execution of the act, particularly as to the expenditures under the same, and the preservation of the records.

6. The clerks for the Circuit Courts of the counties, and the clerk of the Court of Common Pleas for Baltimore city, continue to act as Registrars of Marriages, making returns to the State Superintendent.

This programme is carefully elaborated into a complete and apparently effective plan for the registration of marriages, births and deaths, in lieu of all other statute laws.

Dry Earth, in its Sanitary Applications to Farm Houses and Village Dwellings, is the subject of a special and excellent paper by the Rt. Rev. Henry C. Lay, D. D., LL. D., *Bishop of Easton*, clearly comprehending not only the immediate subject at issue, but *cleanliness* in its broad aspect, as the very foundation of healthfulness; showing a familiarity with preventive medicine in general which many physicians would do well to emulate.

The Secretary reports specially on the *Inspection of County Jails and Almshouses, the Prevalence of Malaria in Maryland*, and the *Sanitary Relations of Jones' Falls and the Basin to Baltimore City*.—Pointing out the faulty construction and wretchedly filthy Jones' Falls, an open sewer which flows from North to South. This stream is the common receptacle of the proceeds of tanneries, tallow rendering and soap making drainage, and privies innumerable, "*two miles of its course being through the most thickly settled centre of the city.* A black, decomposing solution of all manner of animal and vegetable refuse fills its channel; and sulphureted hydrogen, and other noxious gases, are freely given off, which render the neighborhood, especially during the summer months, almost uninhabitable from the sickening odor."

Under all the circumstances, the Report is an exceedingly creditable one to the Board, and shadows both the spirit and the will to effectually use the means for which it pleads to redeem the State from conditions which are a disgrace to any people.

Baltimore's experience last summer dangerously exemplifies the conditions above described. Indeed this is no new thing. The Comissioner of Health of Baltimore[1] has for several years tried to arouse public attention to the necessity of abating the abominable cesspool nuisance known as the Back Basin, the general receptacle for a large part of the sewage and surface drainage of the city, including Jones' Falls. Last year's explosion in the form of "*typho-malarial fever*" cost the city *fifty-nine* lives, a large amount of suffering, and over eight thousand dollars—an amount which, if it had been timely appropriated, would have gone far towards wholly averting such a calamity. But like many other communities, the city fathers of Baltimore have shown a preferred taste for stench and funerals, instead of purity and healthfulness. The Commissioner of Health reports:—"It is estimated that there are about 80,000 houses in Baltimore, each house having its privy pit, giving an area of only 60 feet square to each privy

[1] Annual Report for the year ending Oct. 31, 1876. Pamphlet, pp. 107.

pit. How is it possible, therefore, for a single artery to escape pollution, when most of these pits are purposely 'dug to water,' thereby incurring the very calamity most to be dreaded by a civilized community? . . . It is self-evident that this system, and the use of pumps or springs for drinking purposes, are wholly incompatible." As a congener to these conditions, only common to Baltimore as other American cities, the Public Schools are adverted to. Two examples are given: one numbering 555 pupils, aged from 6 to 12 years, crowded together within a building only 28 feet front by 63 feet deep. The cubic feet of air space per pupil in the different rooms throughout the structure ranged from 35 to 185, giving an average of 72. The other, colored children, 375 pupils, "*the larger part being below ground*," in what was formerly the cellar of the building. The atmosphere upon entering was absolutely stifling, and the languid looks of the poor teachers, to say nothing of the excessively overcrowded conditions of the school-rooms, excited the pity of all who accompanied me on that occasion." Space forbids a further notice of this stirring report, if the people of Baltimore are capable of being stirred, to a due appreciation of the dangerous conditions which they tolerate. Last summer's plague was only a small one; a much greater threatened. The *typho-malarial fever* of last year may be viewed as the *mirage* of Savannah, hanging over Jones' Falls and the Basin ready to receive it.

The Boston Board of Health has sent a circular to every householder in the city, containing precautions against the spread of scarlet fever in families. After giving simple directions for the isolation of the sick person, the circular says: "On recovery, the sick person should not mingle with the well until the roughness of the skin due to the disease shall have disappeared. A month is considered an average period during which isolation is needed. The clothing, before being worn or used by the patient or the nurse, should be cleansed by boiling for at least one hour, or, if that cannot be done, by free and prolonged exposure to out-door air and sunlight. The walls of the room should be dry-rubbed, and the cloths used for the purpose should be burned without previous shaking. The ceiling should be scraped and whitened; the floor should be washed with soap and water, and carbolic acid may be added to the water (one pint to three or four gallons). The infected clothing should be cleansed by itself and not sent to the laundry. In case of death from scarlet fever, the funeral services should be strictly private, and the corpse should not be exposed to view. Because children are specially liable to take and to spread scarlet fever, and because schools afford a free opportunity for this, the Board of Health has excluded from school every child from any family in which a case of the disease has occurred, and has decreed that the absence shall continue for four weeks from the beginning of the attack, except in case subject to the discretion of the Board."

Bahia, Brazil.—The "*Gazeta Medica da Bahia*," for October, 1876, gives the following: There died, during the month of September, 224 persons. The average daily mortality was 7.46 persons; there were 8.09 in August, 9.54 in July, and an average of 10.04 in the six months from January to July, or from about midsummer to midwinter.

In the number for November, 1876, the *Gazeta* gives, from THE SANITARIAN, a detailed list of the mortality in large cites throughout the world, and adds: "There died in this city (*Bahia*), in the month of October, 289 persons, which was 9.32 daily. The city contains 129,-109 inhabitants, and the annual mortality has been 26.42 for every 1,000; or, comparing it with the preceding figures of THE SANITARIAN, it places Bahia between Paris (27), and London (24.50), and less than Washington

(29.77), which has a population of 160,000—a little greater than that of Bahia."

Literature.

Education in the United States, as presented in the sixth annual report of the Commissioner of Education,[1] is one of the most important public documents issued from the Government Printing Office[1]. It opens with a brief rehearsal of the requirements of the Bureau from the time of its institution—"for the purpose of collecting such statistics and facts as shall show the condition and progress of education in the several States and Territories, and of diffusing such information respecting the organization and management of schools and school systems, and method of teaching, as shall aid the people of the United States in the establishment and maintenance of efficient school systems, and otherwise promote the cause of education throughout the country." For the exercise of these functions for the year 1875 the paltry sum of $35,570 was appropriated, and the same amount for 1876.

Notwithstanding, the Commissioner is required to collect statistics and information in regard to education; to prepare annual and special reports, and to publish circulars of information. During the year 4,000 letters were written; 3,500 acknowledgments made; 7,000 bound volumes and 95,000 pamphlets on educational subjects published and distributed.

The total number of educational institutions in the United States in correspondence with the Bureau for the year was 6,085. The foreign correspondence and documents also comprise matters of very great interest and importance, involving much labor without adequate remuneration. Of 32,000 pages of foreign educational periodicals, reports and documents, 500 printed pages were translated, besides a large number of letters, requiring the continuous service of translators. The law provides for only one, with a salary of $1,600. A library of 4,500 volumes and thrice that number of pamphlets on educational subjects has accumulated, but there is no librarian provided for its proper care. And "never before has there been manifested such a spirit of inquiry and investigation in regard to every phase of education, or such a desire for specific and accurate knowledge of our educational condition." Manifestly the Bureau has become a centre of incalculable importance to the educational interests of the country, not alone as a means of combining the best results in the experiences of the several States of the Union in the progress they have made, but in a much wider field, comprehending the conditions and best results of educational systems abroad, as well.

Besides a condensed statement of the general work and needs of the Bureau, records of education, records improved by the International and Centennial Exhibitions, condition of education in other countries, school hygiene and medical jurisprudence—the report comprehends statistics of education for the year: summarizes education in all its phases, from the kindergärten to the universities, colleges, scientific and professional schools; gives statistics of museums of natural history and art; institutions for the deaf and dumb, and blind; orphan asylums; miscellaneous charities and industrial schools; asylums for the feeble-minded; educational benefactions; education among the Indians; Sunday and mission schools; educational conventions and associations—with careful abstracts of proceedings, illustrating the progress made, and the thoughts of the best thinkers. In which relation we are particularly gratified with the prominence given to school hygiene, as an element worthy of consideration for the promotion of the best interests of education everywhere.

[1] Report of the Commissioner of Education for the year 1875, 8vo, pp. 1016. Washington: Government Printing Office, 1876.

Diseases of the Skin, in both their popular and medical aspects, are receiving the attention which they have long deserved. A few months ago[1] we had occasion to commend Duhring's Atlas of Skin Diseases, and now we have from the same author its complement:[2] not, however, as a text to the Atlas, but an additional work comprising a clear insight into the Elements of Dermatology and a knowledge of all the important facts in connection with each disease treated of, without making any pretensions to being exhaustive. In this the author has admirably well fulfilled his aim; utilizing the best works hitherto published on Dermatology, from a clinical stand-point, comprehending all the features essential to a clear recognition of the characteristic lesions and symptoms, and the most improved treatment.

The normal structure of the skin, and parasites, are illustrated by wood-cuts in the highest degree of perfection; indeed, the publishers' work throughout is characterized by that excellence of material and workmanship common to Messrs. Lippincott & Co.

The Magazine of American History with Notes and Queries, is a timely publication in the progress of historical research, which ought to secure the patronage of a large number of inquirers after the truths of history. Its purpose is to supply to persons engaged in historical study a regular avenue of communication with each other and the general public. Confiding in the stimulus given to historical inquiry by the centennial anniversary of the nation to sustain such a work, the publishers issue a specimen number for January, and, if sufficient subscriptions be obtained, the work will be continued in monthly numbers of 64 pages each, printed in quarto form, in the very best manner. This number contains:

Champlain's Expedition against the Onondagas in 1615 (with partial map from edition of 1632), by O. H. Marshall.

The Lost City of New England, by B. F. De Costa.

Sketch of David Jamison, Attorney-General of New York, 1710, by E. B. O'Callaghan.

Diary of Goldsbrow Banyar, Deputy Secretary of the Province of New York. Campaign of 1757. Baurmeister's Narrative of the Capture of New York, September, 1776, translated from the original MSS. in possession of Hon. George Bancroft. Poem, by Thomas Paine.

Letters of Laurence Butler to Mrs. Cradock, 1784 to 1793, on the Early Settlement of the Ohio Valley. First Part.

Notes and Queries.—Fall Proceedings of the New York Historical Society.—Literary Notices of Historical Publications.

Subscription Price, Five Dollars the Year. Single Numbers, Fifty Cents.

Editor—John Austin Stevens, Box 100, Station D, New York.

New York: A. S. Barnes & Co.

The International Review continues to maintain the high and somewhat unique character which it speedily attained, for its success in co-ordinating the highest order of scientific literature and the advanced thoughts of the foremost practical men in the ordinary affairs of life.

The number for March–April, in particular, contains a striking paper of this character, by Mr. James C. Bayles—a gentleman well known to the readers of THE SANITARIAN—on the *Theory and Practice of Architecture*, presenting this subject in its most ostensible aspects, from which the reader is made sensible of defects and capable of correcting them; the kind of literature which is, of all other, the most profitable.

The Sanitary Journal of Scotland, a quarto monthly of twenty-four pages, which began its career just one year ago,

[1] Vol. IV, p. 477.

[2] *A Practical Treatise on Diseases of the Skin.* By LOUIS A. DUHRING, M.D., Professor of Diseases of the Skin in the Hospital of the University of Pennsylvania; Physician to the Dispensary for Skin Diseases, Philadelphia; Author of "Atlas of Skin Diseases," etc. 8vo, pp. 618. Philadelphia: J. P. LIPPINCOTT & Co. 1877.

has singularly well fulfilled its mission as an independent promoter of sanitary science *of* Scotland, but not by any means confined *to* Scotland. The merited criticism which it administers for home use, gives zest to the sound principles which it inculcates, and both qualities combine in showing a comprehension of sanitary science, and a capability of presenting it, which justify the highest expectations for its prosperity.—186 Tongate, Glasgow.

The Cleveland Health Journal, Monthly, devoted to Mental and Physical Culture, E. E. Riopel, A.M., M.D., Editor, pp. 32, is a new and welcome indication of the growing interest in sanitary science, and ambition to cultivate it. We earnestly hope for it the success which all honest efforts in this sphere of usefulness deserve. $1.00 a year; single copies 15 cents. Cleveland, O.: Health Journal Co.

Prevention of Cruelty to Children.—Second Annual Report of the New York Society, 1877. We wish it were possible that everybody in New York could read this report, that all might know and appreciate the significance of the title and the beneficence of the objects of this Society; surely it would then need no comment. Many societies there are, good and true, and extensive in their benevolence, but this touches the tenderest cords of human sympathy. "The details of some of the most important cases" here given, appeal not only to all who have children, but to *all who have ever been children*, to lend a helping hand to this Society.—Office, 860 Broadway, cor. 17th Street.

The Illustrated Annual of Phrenology, and the **Health Almanac** for 1877, have been combined as one publication. Besides the monthly calendars and the usual astronomical calculations, there are seasonable suggestions for each month in the year in regard to diet and care of health; "Colds and their Treatment;" "Principles of Hygiene," and a selection of miscellaneous matter, on vegetarian and hydropathic principles. Also notes and articles on "Principles of Phrenology;" "Self-Study and Development of Character;" "American Women Journalists," with five portraits; "Acquisitiveness—How to Train It;" "Mental Science;" "A Primitive East India Tribe," illustrated; an illustrated article on "The Cultivation of Flowers," and James Russell Lowell, with portrait.

It is well printed with numerous illustrations, and will be sent by mail to any address, on receipt of ten cents, by S. R. Wells & Co., Publishers, 737 Broadway, New York.

The Scholars' Hand-book of Household Management and Cookery, by W. B. TEGETMIER,[1] is an admirable little pamphlet, "written at the request of The School Board of London," equally useful to the ordinary housewife in the United States, as to the school-girls of London. A general exercise of its wholesome tenets would do away with many of the ills which flesh is heir to, and go far towards improving the stamina of the people. Price 50 cents.

Books Received.—Report of Superintendent of Public Instruction, Indiana; 34th Report of Vital Statistics, Mass.; Transactions Medical Society, D. C., December, 1876; Suit for Malpractice, Bergman vs. "Dr." Volker; Cerebral Exhaustion, G. M. Schweig, M.D.; Anniversay Discourse N. Y. Academy of Medicine, W. T. White, M.D.; Trans. Wisconsin State Medical Society, 1876; Trans. Iowa State Medical Society, 1872 to 1876; Trans. Medical Society of Va., 1876; Trans. Medical Society W. Va., 1876; President's Annual Address, Iowa State Medical Society, A. G. Field, M.D.; Trans. Medical Society, Tenn, 1876; Ovarian Cyst, Treated by Electrolysis, R. Hesse, M.D.; Report of Medical Superintendent, State Asylum for Insane Criminals, Auburn, N. Y., 1876; Notes on Burning Theatres and Public Halls, J. M. Toner, M.D.; Disinfection in Yellow Fever, New Orleans, G. B. White, M.D; Trans. Medical Society of Pa., Vol. XI, Part I, 1876; Trans. N. H. Medical Society, 1876; Bennet's Nutrition in Health and Disease.

[1] London and New York: Macmillian & Co. 1876.

EDWIN CHADWICK, ESQ., C. B.

THE SANITARIAN.

A MONTHLY MAGAZINE

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. APRIL, 1877. NO. 49.

MARINE HYGIENE ON BOARD PASSENGER VESSELS.

PRACTICAL CONCLUSIONS BASED UPON THE EXPERIENCE OF OCEAN LINES IN COMMUNICATION WITH NEW YORK.*

By A. N. BELL, M.D.

It is the purpose of this essay to show the contemporary progress of Marine Hygiene with the modern sanitary movement, which began in England about thirty years ago. To this end, the Honorable Commissioners of Emigration, of New York, through their accomplished Secretary, Mr. H. J. Jackson, and the always polite agents of the great ocean lines in communication with New York, have kindly afforded the facilities of their records, and the information of their offices; which, together with some observation, and a taste for gathering knowledge on the subject from transient literature, constitute the writer's sources of information for this summary.

Whoever will take the pains to become familiar with the unsanitary conditions of ocean travel for about fifty years previous to, and at about the time when the modern sanitary movement took its rise in England, will be at the first struck with the graphic descriptions of the proverbial "middle passage"—of human beings stalled, packed and shipped as merchandise. But, on further inquiry, it will be found that the prominence given to the special subjects of the "middle passage" seems to have served the purpose of detracting attention from equally abhorrent conditions in the transportation of European emigrants.

Fifty years ago the common height of a ship's steerage-deck was four to five feet, and the orlop-deck, into which passengers were also stowed, was simply a "black hole" afloat.

Ten deaths for every hundred passengers during the voyage of such vessels was considered healthy; and from twenty to thirty, for every hundred, not uncommon.

It is interesting to note that in the same year, 1842, in which Mr. Edwin Chadwick published his first famous "Report on the Sanitary Condition of the Laboring Population of Great Britain," the Common Council of New York took *its* first step towards correcting the abuses incident to the horribly unsanitary condition of ocean passenger vessels. And from that time forward unceasing efforts were

* Read before American Public Health Association, Boston, Oct. 5, 1876.

made by the city officials of New York for the protection of the health and well-being of immigrants. In 1847 they procured an act by the legislature, creating the Board of Commissioners of Emigration. Meanwhile, in England, several other important reports and papers on local conditions destructive of public health were made in quick succession; and, in 1847, in the same year as the enactment of our emigration law, the "First Report of the Metropolitan Sanitary Commission" was submitted, comprehending information bearing upon the cholera question, especially, of the greatest importance to Marine Hygiene. These simultaneous, but wholly independent, efforts in London and New York, for the protection of the health of the laboring classes under totally different circumstances, constitute the basis of modern sanitary reform, both afloat and ashore.

The first law of the United States regulating the carriage of passengers on board ships was enacted by Congress in 1819, by which no ship was permitted to carry more than two steerage passengers for every five tons of Custom House measurement. But this law made no allowance for freight room and accommodations for officers and first-class passengers, from the computation of the total amount of tonnage; established no regulation for space between decks; did not prohibit orlop-deck, and made no exactions in regard to ventilation or side lights. A ship of 1,000 tons measurement, and with only 500 tons steerage, could take steerage passengers for her whole tonnage: 400 instead of 200. And it should be born in mind that, at that time, no ships were constructed for the express purpose of carrying steerage passengers. This object was wholly a secondary consideration, and provided for extemporaneously, by the temporary filling up of superfluous space unsuited to merchandise; or, after all the merchandise obtainable had been taken on board—at the last moment before departure—the remaining space was filled with passengers. When we consider the space between decks, which at that time was commonly less than six feet; that a steerage five feet high was considered fully sufficient for two tiers of births on all sides; that it had no other aperture for the admission of air than the hatchway, which during the night and bad weather had to be closed; and that this hole was the only opening to another, the orlop-deck, likewise used for passengers; and that these passengers were, in the main, of persons strangers to the virtue of cleanliness, and for the time poverty-stricken, sea-sick and dispirited: when we consider these conditions, we are fully prepared for the failure of a law which took no cognizance of them, and the terrible mortality which followed the poor emigrants when they left their then typhus slums of the old country. As an illustration of the sacrifice of human life thus exposed, out of 98,105 Irish emigrants shipped to Canada by their landlords during the summer of 1847, after the great famine of 1846, there died at sea 5,293; in quarantine and soon after arrival, at Quebec, 8,072; and at Montreal 7,000 more—making in *all that we have succeeded in finding any account of* 20,365!—207$\frac{7}{10}$ per 1,000. Many subsequently perished from the same causes, of which no record was kept.

The *Lark* arrived at Quebec Aug. 12, 1847, from Sligo, whence she sailed with 440 passengers, of whom 108 died on the passage, and 150, sick at the time of arrival, almost all died soon after. The *Virginius* sail-

ed with 496; 158 died on the passage, and 186 sick on arrival, nearly all of whom died within a month. Taking all the data accessible, it appears that on the passage, and in the various emigrant hospitals in the United States ports, during the same year, 1847, the number of emigrants who perished from ship fever was not less than 20,000. The ratio of sick on board ship, per 1,000, during the while was: on board British ships, 30; American, 9.40; German, 8.60. On board vessels from Northern Europe, and particularly from Hamburg and Bremen, ship fever and want of food were almost unheard of. The Bremen authorities were the first who, about 1830, required masters of ships to furnish cooked provisions for their passengers. Previous to that time, all emigrants, and for several years subsequent, all except the Bremen emigrants, were required to provide themselves with food, and to cook it as best they could. The consequences of this negligence were that many embarked without any provisions at all, and very few with sufficient supply; many miscalculated the duration of the voyage, and fell short before its end, and had no means to buy; and for those who had food, the inadequacy of the cooking arrangements was disgraceful in the extreme. For a period of more than twenty years last preceding, and ending as recently as 1855, *there was not probably one* of all the emigrant ships from British and Irish ports which embarked *with a sufficient quantity of proper food* and means for cooking it, for all on board. The cooking arrangements usually consisted of two small cabooses on the upper deck, each about five feet by four, fitted with grates corresponding to the width of the cuddy. Over the grates, respectively, was fastened an iron bar, and on it two iron hooks, on which the emigrant could hang his pot or kettle (if he had one) for cooking his meals; and this was called the steerage galley, for the preparation of several hundred or a thousand meals daily! The result was, that, except when they had nothing to cook, or were sick, there was always contention for room, and not one of the passengers could be sure of getting his food well cooked, or even be sure of getting it again, when once hung over the grate. The bickerings and sufferings ended only with the day, when the fires were extinguished, and began again when the fires were lighted. And so on, from day to day, during the voyage. In view of such quarters, such defects and such poverty, it is indeed in no way surprising that thousands of emigrants—many of them greatly enfeebled at the time of going on board—either died on the voyage, or arrived with ship fever, and died in hospital.

Of the three chief scourges of passenger vessels—ship fever, cholera and small-pox—the late Dr. John H. Griscomb, foremost of American sanitarians, in a communication addressed to a committee of the United States Senate, January 14, 1854, remarks: "That to which the emigrant is most prone is ship fever. The extraordinary prevalence of this disease at the present time (1854), and for the past half century, but especially for the last seven or eight years, is an astounding phenomenon, particularly when it is remembered that we live in the midst of all the light that is necessary for its prevention. My first practical cognizance of the horrible condition in which emigrants are frequently found on shipboard was in 1847, when, as a member of a committee of the New York Academy of Medicine, I visited the Quarantine Estab-

lishment, to inquire into the medical history of the typhus fever then extensively prevailing, and crowding that institution with patients. On that occasion we visited the ship *Ceylon* from Liverpool, which had come to anchor a few hours before, with a large cargo of passengers. A considerable number had died upon the voyage, and 115 were then ill with the fever, and were preparing for removal to the hospital. Before any had yet left the ship, we passed through the steerage, making a more or less minute examination of the place and its occupants; but the indescribable filth, the emaciated, half-nude figures, many with the *petechial* eruption disfiguring their faces, crouching in their bunks, or strewed over the decks and cumbering the gangways; broken utensils and *débris* of food spread recklessly about, presented a picture of which neither pen nor pencil can convey a full idea. Some were just rising from their berths for the first time since leaving Liverpool, having been suffered to lie there all the voyage, wallowing in their own filth. It was no wonder to us, that with such total neglect of sanitary supervision, and an entire absence of ventilation, so many of such wretched beings had perished, or were then ill of fever; it was only surprising that so many had escaped.

"Shocking as this case was, it has been frequently surpassed, at least as far as figures are concerned. In 1842 the ship *Eutaw* gave 120 to the hospital on arrival; in 1837 the *Ann Hall* sent in 158; while, as far back as the year 1802, 188 were taken from the *Flora*, 220 from the *Nancy*, and 259 from the *Penelope*. In 1851 the number of deaths at sea between Liverpool and New York rose to the astounding number of 1,879, almost wholly the result of ship fever. . .

"In 1852 there were treated in the Marine Hospital, on Staten Island, 3,040 cases of ship fever, of whom seventeen per cent. died. These were all emigrants. . . .

"In considering the hygienic aspect of emigration, we start then with the remarkable fact, that of those who embark upon the Atlantic voyage on any of a certain class of ships, out of every twelve one falls a victim; that is, nearly nine per cent. either never reach the promised land, or die soon after."

In 1855 Congress passed an Act requiring Havre and Liverpool passenger vessels to include food and cooking in the prices of the passage, giving two tons of space to each emigrant, and providing for ventilation of the steerage. But about the time of this provision for the better construction and management of sailing vessels, steamers began to take their place in the passenger traffic.

In 1856 three per cent. only of the total number of emigrants arrived in steamers. Three years later, 1859, the average ratios were 230 by steamers to 184 by sailing vessels; 1868, 489 to 204; and in 1869, 517 to 183.

The comparative mortality on board the sailing vessels and steamers speedily demonstrated a large advantage in favor of the latter. Out of 180,449 passengers in 451 voyages by steamers there were 200 deaths; while among 31,953 in 200 voyages by sailing vessels there were 393 deaths. In 1869, among 229,190 passengers in 504 voyages by steamers, 210 died; among 28,333 in 209 voyages by sailing vessels 138 died—showing a ratio of deaths five times greater in sailing vessels than in steamers.

TABLE

showing the Number of Passengers brought to New York by Sailing and Steam Vessels, and the comparative Births and Mortality on the voyage, for 10 years—from 1864 to 1873, inclusive.

	STEAMSHIPS.						SAILING VESSELS.						TOTALS.					
Years.	Number of Vessels.	Cabin Passengers.	Steerage Passengers.	Births.	Deaths.	Ratio of Deaths per 1,000.	Number of Vessels.	Cabin Passengers.	Steerage Passengers.	Births.	Deaths.	Ratio of Deaths of Steerage Passengers per 1,000.	Number of Vessels.	Cabin Passengers.	Steerage Passengers.	Births.	Deaths.	Ratio of Deaths of Steerage Passengers per 1,000.
1864	196	9,729	78,200	46	74	.80	349	773	102,070	186	750	7.34	545	10,502	180,270	232	824	4.57
1865	220	14,621	112,701	52	118	.93	302	661	83,770	186	581	6.32	522	15,282	196,471	238	699	3.55
1866	401	27,507	156,931	83	816	4.30	349	636	74,898	162	851	11.36	750	28,143	231,829	245	1,667	7.18*
1867	464	29,187	193,445	99	255	1.14	282	543	48,495	127	494	10.18	746	29,730	241,940	226	749	3.09
1868	451	27,937	180,449	96	200	.96	200	241	31,953	102	393	12.30	651	28,178	212,402	198	593	2.79
1869	504	29,471	229,190	110	210	.82	269	273	28,333	76	138	4.87	713	29,744	257,523	186	348	1.35
1870	484	28,262	194,088	105	155	.65	156	268	18,824	47	110	5.84	640	28,530	212,912	152	265	1.24
1871	574	31,282	213,698	80	194	.79	122	108	14,969	42	85	5.06	696	31,500	228,667	122	279	1.22
1872	636	36,716	274,889	114	197	.62	96	82	18,967	61	286	15.57	732	36,838	293,856	175	483	1.64
1873	699	37,590	257,545	123	230	.77	49	65	8,762	35	105	11.98	748	37,655	266,307	158	335	1.25
	4,619	272,472	1,891,056	1,008	2,449	Av'ge 1.16	2,119	3,650	430,441	1,024	3,191	Av'ge 9.14	6,733	276,122	2,321,577	1,949	6,294	Av'ge 2.78

*Cholera year.

England also passed laws governing the carriage of passengers by sea, in 1852, 1855 and 1863; providing an abundance of wholesome cooked food; limiting the carriage of passengers to two decks only; requiring the sexes to be berthed separately; restricting the number of passengers to space: (on the upper passenger deck, one statute adult to every fifteen clear superficial feet of deck; on lower passenger deck, one to every eighteen clear superficial feet; provided, nevertheless, that if the height between such lower passenger deck and the deck immediately above it shall be less than seven feet, or if the apertures, exclusive of side scuttles, through which light and air shall be admitted together to the lower passenger deck, shall be less in size than in the proportion of three square feet to every one hundred

superficial feet of the lower passenger deck, no greater number of passengers shall be carried on such deck than in the proportion of one statute adult to every twenty-five clear superficial feet thereof); providing for qualified physicians, and numerous other wholesome restrictions—all enforced by competent officers, rigid discipline and penalties, which have had the effect of placing the Marine Hygiene of passenger vessels on an equal footing with the best conditions of civic cleanliness in the most enlightened communities.

At the outset of the inquiries for the data herein comprehended, the writer addressed a circular note to the agents of the several steamship companies, of ten or more years' communication with New York, and, in addition to the facilities they have afforded for gathering information up to the time of complete records above given, they have kindly furnished the following memoranda:

The Cunard Company's Fleet consists of 24 ships, namely:

Abyssinia,	Hecla,	Parthia,
Algeria,	Java,	Russia,
Aleppo,	Kedar,	Samaria,
Atlas,	Malta,	Saragossa,
Batavia,	Marathon,	Scotia,
Bothnia,	Morocco,	Siberia,
China,	Olympus,	Sidon,
Demerara,	Palmyra,	Scythia,
Tarifa,	Trinidad.	

From New York to Liverpool, during the year 1875, the above-named ships carried 5,440 cabin passengers, and 4,314 steerage passengers.

From Liverpool to New York, during the same year, 6,378 cabin passengers, and 6,972 steerage passengers.

1876, landed at New York, 6,372 cabin passengers, and 3,425 steerage passengers.

Carried from New York, 5,200 cabin passengers, 4,038 steerage passengers.

Present Fleet of the Inman Steamship Company:

City of Berlin,	City of Bristol,	City of London,
City of Chester,	City of Brooklyn,	City of Montreal,
City of Richmond,	City of Brussels,	City of New York,
City of Antwerp,	City of Limerick,	City of Paris.

Total number of passengers, cabin and steerage, carried by Inman Steamers *from America*, 1866–1875, inclusive, **150,406; number of deaths, 110.**

Liverpool and Great Western Steam Company, "New York, September 28th, 1876.—So far this year there have been but two deaths—one a passenger, from consumption, and one an engineer, from accident. We have now six ships in commission, with a crew of 100 to 110 each, and an average, this year, of 250 passengers. Each ship has a surgeon, and, when necessary, an assistant surgeon also.

The *Captain and Surgeon* make a tour of inspection, *every day*, of the *entire ship*, so far as devoted to crew and passengers; they also inspect provisions daily, before same are issued to either crew or passengers.

The general opinion of captains in our line is that sailors are much improved of late in their health and habits of cleanliness, etc. Crews are invariably ordered under shelter in bad weather when not actually employed, thereby keeping dry and warm, and of course adding to their general health; the bedding is ordered out for airing at least once a week, and oftener if requisite; no swearing or profane language allowed under penalty of two days' pay.

Divine service held every Sunday, and all hands not on duty are expected to attend in clean clothes and persons. A hospital for crew on main deck; if ordered into hospital by surgeon, a shipmate is sent to nurse; if small-pox, a nurse that has had it before. One man is appointed to each forecastle, to serve meals and keep place clean generally; fires in each forecastle when cold or wet."

The Anchor Line.—*New York and Glasgow Service:* Alsatia, Anchoria, Bolivia, California, Ethiopia, Victoria.

New York and London Service: Anglia, Australia, Elysia, Utopia.

Mediterranean and New York Service: Acadia, Alexandria, Assyria, Darien, Caledonia, Castalia, Columbia, Italia, Napoli, Olympia, Scotia, Sidonian, Scandinavia, Syrian.

Passengers sailed from New York, 1873: Cabin, 2,281; Steerage, 8,152; Total, 11,033.
" " " 1874: " 1,866; " 11,177; " 13,043.
" " " 1875: " 1,743; " 6,849; " 8,592.
" " " 1876: " 1,916; " 6,506; " 8,422.

Passengers arrived in New York, 1873, in 87 Steamers: Cabin, 2,272; Steerage, 19,032; Total, 21,304; Births, 7; Deaths, 14.

Passengers arrived in New York, 1874, in 89 Steamers: Cabin, 1,610; Steerage, 11,658; Total, 13,268; Births, 1; Deaths, 6.

Passengers arrived in New York, 1875, in 52 Steamers: Cabin, 1,492; Steerage, 8,257; Total, 9,749; Births, 4; Deaths, 4.

Passengers arrived in New York, 1876, in 100 Steamers: Cabin, 1,952; Steerage, 6,476; Total, 8,428; Births, 3; Deaths, 4.

North German Lloyd S. S. Co., of Bremen.—Four lines of steamers: 12 steamers running between Bremen and New York; 4 between Bremen and Baltimore; 3 between Bremen and New Orleans; 4 between Bremen and Brazil and La Plata. Crews generally consist of about 100 to 120 men, all told. Each passenger steamer carries ten large metallic life-boats, and is provided with two cannon, rockets and usual signals. A large assortment of drugs and medicines is taken on board in Bremen, before each trip. The crew is recruited through sailors' agencies, at the port of departure (Bremen), and is examined by the steamer's physician before being shipped; if taken sick on board, the sailors and all others receive medical treatment without charge.

Rations for crew: *meat*—either 500 grammes (1 lb.) fresh beef, or 375 grammes ($\frac{3}{4}$ lb.) salt pork, or 250 grammes ($\frac{1}{2}$ lb.) smoked pork, or fresh fish Friday, in the following proportions: Beef, 4 times a week; bacon, twice a week; fish, once a week; bread, 1 lb. a day; butter, 1 lb. a week; water, $1\frac{1}{4}$ gallons a day; vegetables, potatoes, peas, beans, etc.; coffee, $\frac{5}{16}$ lb. a week; tea, $\frac{1}{16}$ lb. a week; vinegar, salt, spices, etc., as wanted. In port, fresh meat only.

These are the regulation rations of the government for mercantile seamen.

Clothing is paid for by the crew at wholesale prices. After six

months' service clothing is given without charge. Petty officers receive uniforms twice a year, free. The first uniform is paid for.

Change of clothing. When a watch turns in after stormy weather, they are required to change clothing.

Inspections. The captain, doctor, first officer, and chiefs of departments (chief cook, chief steward and purser), are required to inspect the steerage, crews' quarters and the various departments daily; the steerage twice a day.

Bedding of crew is kept by the crew and inspected by chief officers.

Steerage passengers' quarters give each passenger about 16 superficial feet; 7½ feet deck height.

Food and drink are inspected by a government inspector before taken on board in Bremen; during the voyage by captain and purser. Each steamer has two hospitals, with six or eight beds each; two stewardesses for ladies.

Cooking utensils and servings are inspected by the chief cook and chief steward. Appended, is a list of an average crew:

Captain and four navigating officers; two boatswains; two carpenters; four quartermasters, for steering; one sailmaker; four steerage stewards; twenty-one able seamen; three seamen; purser and assistant purser; doctor; barber; four cooks; two bakers; one butcher; three scullerymen; one porter (for cleaning lamps); one chief steward and assistant; fifteen stewards; two stewardesses; one chief engineer; three engineers; four assistants; nineteen firemen; fifteen coalheavers.

Officers receive half a bottle of wine and one bottle beer a day, free. Firemen, four glasses brandy a day; sailors, two glasses brandy a day, free.

The number of vessels belonging to or trading with ports in the United States, reported totally lost and missing during the year 1876, and their estimated value, were as follows:

1876.	Stmrs.	Ships.	Barks.	Brigs.	Schs.	Total.	Value.
January	–	2	6	4	17	29	$480,000
February	–	5	7	6	25	43	543,000
March	4	8	12	7	38	69	1,600,000
April	2	3	4	6	22	37	510,000
May	–	1	7	6	6	20	330,000
June	3	3	2	5	13	26	530,000
July	–	2	1	1	9	13	265,000
August	1	4	2	2	9	18	520,000
September	3	3	3	4	26	39	775,000
October	2	4	17	5	20	48	950,000
November	1	3	9	8	24	45	597,000
December	7	3	13	4	35	62	790,000
Total for year	23	41	83	58	244	449	$7,890,000

MILK-BEER.

The "*Journal d'Hygiène,*" for January 10th, contains a notice of this new product of fermentation, from the pen of A. Chevallier, so long and favorably known as a writer on subjects relating to hygiene. The author has heretofore discussed at length the subject of beer in general, and its importance as a question of public hygiene, in the "*Journal de Chimie Médicale,*" and also in his "*Traité des Falsifications.*" He considers beer a very useful drink, containing many of the salts favorable to nutrition, besides nitrogenous substances easily assimilable, and, especially, an abundance of the elements that support respiration. Unfortunately the adulteration of beer has become so common as not only to destroy its hygienic properties, but to render its use dangerous. He then speaks of the new product of *lacto-alcoholic* fermentation, which he calls *la Bière de Lait,* as one destined to occupy an important place in alimentary hygiene. The manufacture of this beer rests on the same principle as that of other beer, except that milk is used instead of water, in its preparation.

This beer has a yellowish color, and a density a little greater than ordinary beer: the proportions are 950 gram. (or 30.7 ounces) to the litre (2.113 pints), for ordinary beer; while milk-beer weighs 980 gram. (31.4 ounces) to the litre.

The taste is pleasant and less bitter than the generality of malt liquors.

To determine the quantity of alcohol.—Three décilitres (10.14 ounces) were placed in a retort, and one décilitre was distilled off, and the alcohol was found to be about 5.5 per cent. The proportion of alcohol varies in different kinds of beer: thus strong beer contains from 3 to 6 per cent.; that quality which has double strength contains from 6 to 8 per cent. of alcohol, while foreign beers are much stronger.

To determine the quantity of extractive matter.—One décilitre (3.38 ounces) was placed in a porcelain vessel, and the matter remaining after evaporation was found to weigh 9 grammes; one litre, therefore, which is equal to $1\frac{1}{10}$ quarts, contains 90 grammes or 3 ounces of extractive matter. Experiments made with a certain quantity of this extract showed the presence of an aromatic substance, of lactose, of fatty matter and of other extractive matters. The extract, incinerated, yielded 7.70 per cent. of ashes, containing small quantities of alkaline salts, phosphates, lime, etc.

As copper vessels and lead pipe were used in the manufacture of this beer, tests were employed for these metals, but no traces of them were found.

This milk-beer is considered an alimentary beverage agreeable to the taste, uniting the aromatic and the bitter principles of the hop, and the nutritive, tonic and analeptic principles of the milk and the

malt, supplying all the elements of the economy, and is perfectly assimilable.

In fine, if we admit the utility of beer in general, we must see the great advantages in a hygienic point of view that this beer has over all the other kinds. The water is replaced by milk, whose albuminoid principles—lacto-protéine—together with a great quantity of the salts found in the serum of the blood, give to the beer the advantageous union of all the constituent principles of milk, malt and hops, and thus greatly enhances its nourishing properties.

———o———

Madeira as a Health Resort.—The temperature varies from an average summer heat of 72° to a winter of 60°, giving an annual mean of 66°, which has made it the favorite resort of consumptive invalids from all parts of Europe. Whether it is the best in the world will appear when Tenerife is considered. It is enough to say at present that the humidity of the Madeira winter, due to a longer prevalence of rain, and the excessive discomfort occasioned at other times by the dry, noxious, and almost insufferable *l'este*, or east wind, which blows from the coast of Africa, where it is known as the *harmattan*, and equally dreaded, are not experienced on the Spanish island, but are, in a measure, compensated for by the greater comforts that are at the command of the wealthy invalid in Madeira. The island is easily reached in four or five days by steamers from England and Portugal. The English language is spoken as commonly as the vernacular, and private hotels are numerous, where extensive suites of apartments, excellent attendance, and the most delicate *cuisinerie* are obtainable. Hammock-bearers accustomed to the business tenderly carry the consumptive for daily exercise, and the number of these during the season when the island is most frequented is not a pleasant spectacle for the robust and healthy visitor. At every step are met slowly passing hammocks with their pale-faced burdens; but all the hammocks do not contain invalids. Some are stretched to their utmost by the portly forms of residents of the island, who, particularly the ladies, find this a not uncomfortable, and in certain cases the only possible, means of progression.

Besides comfortable hotel, boarding-house, and hospital accommodations for every class, more numerous than on any other of the islands, there are reading-rooms and promenades open to the sea, which beguile the hours of the invalid visitor. Seated under the lofty trees of the Praça Academica, watching the ceaseless roll of the ocean, breathing the balmy air of this charming climate, and soothed by a thousand other delightful influences, mind as well as body at rest, he accustoms himself to that self-denial so difficult amidst the bustle and turmoil surrounding and tempting him in his own northern home; and often forgetting that he is ill, he gains that cheerfulness and animation which sometimes prelude his complete recovery. Often the invalid comes hither so late that no restoration is possible.—Dr. A. L. Gihon, in *Harper's Magazine for March.*

SCHOOL HYGIENE.

Proceedings of New York Medico-Legal Society, January 3, 1877, Prof. F. H. HAMILTON, M.D., LL.D., in the Chair.

Prepared by DR. G. W. WELLS, Secretary of the Society.

Compulsory Education.—James Appleton Morgan, Esq., said he had listened to the discussion of the subject under consideration with a good deal of interest. At the time the discussion was first presented, a member of the Committee called upon him and asked him to join in it. He doubted whether the scope of his experience would add anything to the general stock of accumulated knowledge on the subject; but the gentleman suggested that he (Mr. M.) make it his duty to confine his remarks to the Compulsory Education Act, and it did seem to him but just, that if children were compelled to go to school, they ought, at least, to have decent places to go to. Until recently he was under the impression, as probably many others are, that if parents did not send their children to school the police took them there. That is not the case. The Superintendent of Truancy, Mr. Stanton, has kindly given us a set of papers, which I have brought with me, which will illustrate the method of procedure. I may say, that when I went into Mr. Stanton's office, I expected to find a pamphlet or so on the subject; but I not only found a pamphlet, but a whole literature, so that I was fairly staggered with the amount; but, as I before remarked, I provided myself with a set of blanks, as in use by the Board of Education.

The first paper is something to this effect:

Office of the Superintendent of Truancy, Hall of Board of Education, No. 146 *Grand Street, New York,*.....18....

You are hereby notified that your child.....aged.....has not attended school for the period of fourteen weeks during the present year, as required by statute (Chapter 421 of the Laws of 1874, as amended by Chapter 372 of the Laws of 1876). Yours, etc.,

.....Supt. of Truancy.

There is also a second blank, which is sent to the employer:

Office of the Superintendent of Truancy, Hall of Board of Education, No. 146 *Grand Street, New York,*.....18....

You are hereby notified that you have in your employ, contrary to the Statutes (Chapter 421 of the Laws of 1874, as amended by Chapter 372 of the Laws of 1876) .....a child between the ages of eight and fourteen years, who has not attended school for fourteen weeks during the year next preceding that in which he has been in your employ, and further, that you will, if you continue so to employ said....., subject yourself to a penalty of $50 for such offense. Yours, etc.,

.....Supt. of Truancy.

Upon the receipt of these requisitions, the employer or parent is supposed to comply with the law. If he does not, the Superintendent of Truancy takes cognizance of the matter, and makes an affidavit about as follows:

The People of the State of New York, on complaint of.....*vs*..... City and County of New York, *ss*.....residing at No.....Street, in the City of New York, being duly sworn, says, That he is an Agent of Truancy,

duly appointed under the provisions of an Act entitled, "An Act to secure to Children the benefits of an Elementary Education," passed May 11th, 1874.

That.....is a child between the ages of 8 and 14 years, viz.: of the age of.....years; that said.....is a child whose attendance at school deponent has been and is unable to procure by persuasion, argument or any means other than force, and who said deponent has found wandering about the streets and public places of said city during the school hours of the school day of the term of the Public Schools of said city, located in the district in which said.....resides. That said.....has no lawful occupation, and, as deponent verily believes, is growing up in ignorance, and said .....is a proper subject for arrest and incarceration under the provisions of said Act aforesaid.

Wherefore, said deponent prays that said.....be apprehended and dealt with as the law may direct.

Sworn to before me this.....day of.....187.....

And if the child is not sent then, a fourth paper, which is an ordinary commitment, is made out, when the child is taken not to the school, but to Randal's Island.

Commitment. Police Court,.....District.

STATE OF NEW YORK, CITY AND COUNTY OF NEW YORK, *ss.* By ..... Esq., Police Justice for preserving the Peace in the City and County of New York: to the Policemen of said City or any one of them, and to the.....These are in the name of the People of the State of New York, to command you, the said Policemen, or any one of you, to take and convey to the said.....the body of.....who being charged before me on the oath of.....an Agent of Truancy in said city, with being.....found wandering about the streets and public places of said city, in violation of the Act of the Legislature of the State of New York, entitled, "An Act to secure to Children the benefits of an Elementary Education," passed May 11th, 1874.

I caused the said.....to be brought before me for examination on said charge, and I proceeded to inquire into the matter in his presence, and having read the proofs and allegations submitted to me, and duly considered the said matter.....was convicted on competent testimony aforesaid, of being..... And I having been satisfied by sufficient proof that the said.....is a child between the ages of eight and fourteen years, and is of the age of..... years.....was adjudged by me to be a proper object to be committed to the .....Now, therefore, you, the said.....are hereby commanded to receive the said.....who is hereby committed by me to your care on said .....there to be restrained and detained and sent to school for such time and in such manner as may be designated by the Board of Education of the said City of New York, or until.....shall be discharged according to law.

Given under my hand and seal at the .....District Police Court, in said City of New York, the.... ...day of.....in the year of our Lord, One Thousand Eight Hundred and Seventy..... ... .*Police Justice.*

The pamphlets which he had been able to procure are full of interesting matter, but so voluminous that he did not feel justified in attempting even a summary of their contents.

A difference of opinion exists among members of the Board of Education as to the value and efficacy of the measure, which has now been some time in operation. The chief objection put forward is that it is unwise and leads to no good results to treat as criminals young boys and girls addicted to truancy, and that to throw them into prison, even for the shortest space of time, casts a stain and reproach upon them out of all proportion to the trivial offense laid to their charge. Other means of correction and reform, it is urged, can be employed without inflicting a degradation, and subjecting him or her to the pernicious influence of contact with wicked and depraved characters that may lead to the utter ruin of the child. To place a child in a

common prison for mere absence from school is claimed to be outrageous. To obviate this difficulty it has been suggested that a building should be provided specially for the confinement of truants, but even this plan is not favorably considered; and it now remains a question, whether or not the enforcement of the law may be made the means of any important service to our system of education or extensive benefit to the community.

The truant agents, under the direction of the Superintendent of Truancy, have been active in the work of investigating the causes of the absence of all pupils between the ages of eight and fourteen, who have been reported by the principals as truants, or whose absence was protracted or not accounted for. In this manner many children absent from school without the knowledge of their parents have been returned to the schools, and by this means not only has the attendance of pupils been somewhat increased, but the amount of truancy diminished, since other children have been deterred from playing truant by the greater certainty of detection, as well as in some cases by the fear of being sent to the House of Refuge, in which are confined youths transferred from State prisons as incorrigible. The City Superintendent is of opinion that no other effect than this has been produced by the enforcement of the law, except, perhaps, an indirect influence upon the minds of parents and guardians to send their children to the schools with greater frequency and regularity; but adds that it is but fair to attribute a part of the increase of attendance and diminution of absenteeism to the operation, direct or indirect, of the law.

The subject will continue to occupy the attention of the Board of Education, and it is expected that the Legislature now in session will be asked to modify, if not repeal, the provisions of the act that authorize the arrest and commitment of truant children to institutions that largely partake of a penal character.

The idea of compulsory education is not at all new. The speaker had been very much interested to find that, in the year 1642, the first law for compulsory education in this country originated in the then commonwealth of Massachusetts.

It is as follows:

Extract from the Laws of the Colony of Massachusetts Bay, 1642.

"Forasmuch as the good education of children is of singular behoof and benefit to any commonwealth, and whereas many parents and masters are too indulgent and negligent of their duty in this kind, it is therefore ordered by this court and the authority thereof:

"That the selectmen of every town, in the several precincts and quarters where they dwell, shall have a vigilant eye over their brethren and neighbors, to see—First, that none of them shall suffer so much barbarism in any of their families as not to endeavor to teach, by themselves or others, their children and apprentices so much learning as may enable them perfectly to read the English tongue and knowledge of the capital laws, upon a penalty of twenty shillings for each neglect therein; and farther that all masters do breed and bring up their children and apprentices in some honest, lawful calling, labor or employment, either in husbandry or some other trade profitable for themselves and the commonwealth. If they will not nor cannot train them up in learning to fit them for higher employments, and if any of the selectmen, after admonition by them given to such masters of families, shall find them still negligent of their duty in the particulars aforementioned, whereby children and servants become rude, stubborn and unruly, the said selectmen, with the help of two magistrates, shall take such children or apprentices from them,

and place them with some masters for years—boys till they come to twenty-one and girls eighteen—years of age complete, which will more strictly look into and force them to submit unto government, according to the rules of this order, if by fair means and by former instructions they will not be drawn into it."

Necessity of increased accommodation in New York.—Mr. Wm. A. Owen, Principal of the Eighty-seventh Street School, New York city, on being called upon by the Chairman, expressed his gratification with the interest the Society had taken in the subject, and said:

I know something of the working of the school system under the Board of Education, having been engaged in the Public Schools of this city for the past twenty years.

1. We need such a law; but we need something else before we can put that law into active operation—*i. e.*, more school accommodation. There are no schools except those in the upper part of the 12th Ward, the 23d and 24th Wards, that are not now overcrowded. Yet this law says every child between eight and fourteen must attend school at least fourteen weeks each year.

We need at least 50 per cent. more school accommodation.—The primaries never have been large enough. The question comes up, How can we get room in this city, where land is so high?

Our school building should go from street to street. A large building will accommodate a large number of pupils. This will secure a well graded school, and therefore a successful school.

2. **We need Medical Inspectors.**—I have the pleasure of being acquainted with one of your members, Dr. O'Sullivan, who for two years occupied that position in our schools, and I know its value. We have now 204 departments and primary schools. In the last year we had 202 school days. This would not admit of a visit from a single medical inspector for all the schools of more than one visit a year, which would not do much good. Dr. O'Sullivan made more frequent visits. We should have, therefore, a medical inspector for each district, and he would find work enough to do.

3. **Age of admittance and hours of study.**—With all due deference to what has been said here, I would not have a child go to school until he or she is eight years old; but we should have for the poorer classes another building not called a school, but a nursery—a place to develop the physique, where the children could take their playthings and be cared for, the mother knowing that while she is out earning bread her child is safe and happy. To these buildings I would admit children between four and eight years of age.

I think I am right in saying that a large portion of our leading merchants and business men were formerly boys from the country. Why is it that they so often outstrip our city boys? Is it not that they are not afraid to work, and are unable to bring to their work strong and well developed bodies? What we want to do for our city children is to develop their physical powers—and that brings me to

The question of study.—I would not have a child touch a book to study after three o'clock, except in the two highest classes. Our boys and girls do not have enough time to play. By the rules of the Board of Education we must not give the children lessons to learn out of school—that will take over two hours' study. This

means the average child. I claim that five hours' teaching is enough for a teacher each day. A child should not be required to do more until he has reached the 1st or 2d grade. Up to that time, don't ask him to give more than one-quarter of the twenty-four hours to school.

The employment of means to avoid further crowding and poisoning in our schools.—This can only be done by obtaining additional school-room accommodation.

The 1st, 2d, 3d, 4th grades in Grammar Schools are allowed nine square feet per pupil—the 5th, 6th, 7th, 8th grades are allowed seven square feet of floor space per pupil.

We often find large boys in the lower grades.

Large class-rooms, with plenty of sunlight and ventilation, will remove most of the trouble. Your Committee speak of the assembling rooms in our schools as valuable space not utilized, because only used a few hours each week.

A large assembling room is one of the great needs of our public school, and the few hours per week it is used tell favorably on the drill and discipline of the school.

A school that has not an assembling room sufficiently large to assemble the whole school is very seriously crippled in its discipline and efficiency.

Dr. Garish said: It is obligatory upon us that we should demand the enactment of a law to the effect that every child should be supplied with a given space in these schools to breathe in, and not allow any boy to enter the school without this given space is allowed him. We would then be in position to place our children in a better physical condition than at present. It would indeed be well if a law was enacted making it obligatory to educate the men whose duty it is to make the laws. Schools should be placed in more healthy localities, where the fresh air can reach them, where no deadly effluvia rise from the ground. He had always advocated the appointment of Medical Superintendents in all the schools. It should be so arranged that an inspector should visit every school every day, to look after the physical condition of these children; and if possible children should be followed outside of their schools into their homes, and parents should be advised respecting sanitary laws. They should be placed in apartments where they can breathe pure air. If I could have my wish, he continued, I would have attached to every school a gymnasium. Let us give our children good physiques. We cannot expect to have a sound mind unless it be engrafted on a sound body; we are doing too much brain work in America, and I am happy to see that we are getting more into the idea of giving ourselves a little more rest and recreation. We are beginning to appreciate it, and to imitate in this regard our German citizens. I delight to look forward to the time when there will be more holidays among us. They are a sanitary necessity and should be encouraged.

Judge Fithian, on being called upon by the Chairman, remarked that it seemed to be apparent to every gentleman and to every citizen, that you have on hand here a question of the very greatest moment—the welfare of our city, and, indeed, the welfare of all the cities of this country. You, gentlemen, are grappling with a branch of that great social problem which has forced itself every year more and more upon the attention of a cultured and thoughtful people;

and that is, how and in what manner shall you be able to manage the great populace aggregated in your great city, in such a way that this population shall not deteriorate, and the city not become a nest of vice and crime and moral turpitude; but how control, shape and manage it so as to retain the maximum amount of culture and education and keep down the lowest minimum amount of vice, ignorance and crime that yearly occur in our great city; and how it is to be managed—whether you are to give it up to men and women with sound minds in sound bodies, with good moral and mental culture, or the opposite—these are propositions that certainly are tasking the consideration of the able and intelligent, and benevolent men and women of the age; and finally I can add no more than to say that I bid you God speed, and shall be happy to do anything that I can in my humble way to assist you in a cause so loyal.

Proportion of Blind to Population.—Dr. Robert R. McIlvaine said he wished to ascertain from Dr. Agnew what are his data for the condition of the eyes of the children of schools? Where does he begin, and what length of time have they been deteriorating? I wish to know what is the proportion between the whole number of blind to the whole population at home; and how does that ratio compare with the same population of unfortunates on continental Europe and in the islands around it?

Dr. Agnew. I do not know.

Dr. McIlvaine. Now, the Common School is the first product of the Reformation first inaugurated by Luther, in Saxony, with the assistance of Melancthon, in 1525, and it went into operation, I believe, in 1527. If this use of the eye causes deterioration, then the Saxon people would be by this time in a helpless condition, because during the last 350 years they have been using means to promote blindness.

Is it a fact that the use of organs is destructive to them? Is it not rather strengthening to them? Is it not a physiological fact, that the use of all our organs is a means of fortifying them against harm, and of preparing them for usefulness? Has it been demonstrated that myopia—or near-sightedness, as it is called—is a progressive infirmity? Mr. President, I want to know your experience.

The Chair here answered that the *abuse* of the eye causes the disease referred to.

Dr. McIlvaine. Excuse me, Mr. President, that is a new departure; we are not speaking of that. To begin with the last data in my possession: in England and Wales, in the year 1851, there was one blind person to every 979; in Ireland, one to every 878; in Scotland, one to every 960, making a common ratio of one in every 950. In Belgium the proportion of blind to the other population is one in every 1,316; in France, one in 1,357; in the lower parts of Germany, one in 950; Prussia, one in every 1,401; Saxony, one in 1,666; Switzerland, one in 1,570; in Sweden, one in 1,091.

Let us now return home. The population in 1850 of blind, of deaf, of dumb, of insane, of idiotic, in the United States, numbered 50,994—being one blind person in every 2,368; in 1860, one in 2,519—and this is what our experts designate progressive blindness, Mr. President. I am happy to say that these facts have been so. I

may add, in the language of the psalmist: "God hath not dealt so with any other nation." We have fewer persons suffering from this infirmity than any other people of whom we have published records. We cannot presume on this matter, nor be deluded by the mere declaration of experts. This is too serious and important a subject. If the schools are preparing a population of the unfortunate blind people, why, it is one of the greatest calamities that can possibly befall the race, and would imply a deterioration of the race in common. But I am happy to say we have data to the contrary. It will be remembered that in the State of New York, in 1860, among the white people, one in every 2,327 was 90 years of age, and one in every 41,647 was 100. You remember I am speaking of the Caucasian race. The data, as to the eyes and longevity, is applied wholly and particularly to the white people. We must not allow ourselves to be led into error by declarations unsupported by demonstration. While giving these gentlemen credit for their industry, we want to have data by which, as a touch-stone, to refer these circumstances to. This, I regret to say, has not been the case; we have here an accumulation of data, without any landmarks whereby to ascertain whether we are deteriorating or whether we are improving.

In relation to the Report of the Committee, there was a reference made to the unsanitary results produced by the contact of water with coal in the cellar in bulk. Now, gentlemen, we know what water is composed of: oxygen 8, hydrogen 1—making 9, while the coal that is generally used, I believe, is composed of carbon 75.28 (what is called coke coal), hydrogen 4.18, nitrogen 15.96 and oxygen 4.58. Now cannel coal is composed, according to analysts, of carbon 64.72, hydrogen 21.56, nitrogen 13.72. So that you see there are none of those elements that are in themselves or as far as we can see brought in contact, which are capable of producing what are called poisonous effluviæ or poisonous products.

In 1872, on my way to Paris, I was, while in London, asked by a gentleman to listen to a lecturer on sanitary science. Being presented to the lecturer after the close of his discourse, I observed to him that one thing he had either forgotten or overlooked. I referred to the location of a house: that a house placed east and west had the sun only one-half of the day, whereas a house placed north and south had the sun in the forenoon and in the afternoon—the east side in the forenoon and the west side in the afternoon.

There is something in understanding how to place a house in order to have it placed in a sanitary condition, and there are but few who appear to appreciate it.

In speaking to a gentleman who called himself a sanitarian, the other day, concerning this matter, he said it was a mere whim—it was immaterial how a house was placed. Now the parties who had charge of the building of the Women's Hospital, as it is called, and the parties who had charge of the Presbyterian Hospital, did not know how to use the ground. I speak of this because I have seen the house externally. The St. Luke's Hospital might have been arranged so that the sun would have penetrated every department, as they had the whole lot under their control. It therefore would ap-

pear that there are to be taken into account several considerations in building a house:

1. In the location of the house, in regard to the sun, which is never to be dispensed with, if we possibly can control the ground on which we build. 2. A building should be so constructed that every department of it shall be the recipient of this great luminary, which is itself life-giving and life-preserving.

He made no answer. He stated that it was difficult sometimes in the city. I told him that was true; but where you can control land the sunlight should never be dispensed with.

Duty of the Health Department.—Dr. Morreau Morris, having been invited to address the Society, said that he had been unfortunate enough not to be present when the Report of the Committee was read. He had had some experience in the study of the sanitary condition of the schools when he was a sanitary inspector.

It is now about nine years since he was a sanitary inspector in the Metropolitan Board of Health. His duties led him to visit the school-houses, and in doing so he made some investigations in reference to their sanitary condition and their effects on school children. It seemed to him that the crowding was such as to be very detrimental to the health of the children. There was also a great want of ventilation. The ventilating appliances were so deficient, that they were obliged to open the doors and windows, and the air blew upon the heads of the children in the room—this condition he noticed at once, and so reported the facts to the Board of Health. He was immediately informed that it would not be well to make any more inspections of school-houses. He was treading upon the toes of another Commission. If there was anything to be done, it was better that the Commission should be notified that it ought to be done.

As to the enactment of some law covering the difficulty referred to, he would say that we have plenty of law—too much, in fact. The trouble is, that there is no enforcement of the law. The Metropolitan Board of Health gives ample power to the Health Department to supervise all the schools or any other building in the city of New York within its jurisdiction; to supervise and recommend and order or compel the execution of whatever it thinks necessary to be done. *It seemed to him that this is a point which should never be lost sight of, even by this Society, in whatever course it may take.* There is law enough and law directly to the point; and the only difficulty is in the gentlemen who are at the head of that Department, in not having the law executed. He was aware that there is a timidity about executing a law, especially when it comes in contact with another Department of the same city government, yet it seemed to him that sanitary questions are those questions which relate to life and health, and should be executed by the power to whom it has been delegated—no matter with whatever Department it may clash! Now overcrowding of the schools is one of the great evils which exist in the public school-houses of the city. Children are sent there not only because the law compels them to be sent, but also from a natural desire on the part of the parents to have them educated. But there is also another reason for the overcrowding, which you perhaps recognize at once, and that is the desire, nay, almost the necessity among the poorer classes of the laboring population, to

have their children taken care of while they go out to earn their bread and butter; therefore they will send them to the school which is nearest. He agreed with the Principal of the Eighty-seventh Street School, that there should be other means provided for this class. The suggestion of a nursery was a good one. He had not only seen schools where there was not only wet coal in the cellar, but where urinals were allowed to overflow, and the children allowed to play in the basement. This state of things would not be allowed in your own dwellings. The practice is one of the most detrimental things done in the schools. If the children should be allowed to run over the rocks with the goats, they would do better than if they were allowed to play in the cellar.

PROF. HAMILTON asked whether he understood Dr. Morris to say that the Board of Health had power to authorize inspection of school houses, and whether they had power to enforce any suggestions in that regard which may be made by proper persons?

DR. MORRIS said they had.

PROF. HAMILTON asked whether such reports were ever sent to the Board of Education from the Board of Health?

DR. MORRIS replied that such reports had been sent.

PROF. HAMILTON asked, further, what became of such reports?

DR. MORRIS believed that they were pigeon-holed.

PROF. HAMILTON: Ah! Were these inspections made within the last two years?

DR. MORRIS said he could not answer as to two years; he thought they had been within four years.

PROF. HAMILTON inferred that they ceased to make inspections because their suggestions were not followed.

DR. MORRIS said that was one of the points he wished to make.

———o———

Nervousness and Nervines.—Nervousness is one of the prices we have to pay for civilization; the nervous savage is a being unheard of. For this disorder, which is partly of mental and partly of bodily nature, relief is sought in various ways, and among these we may place the employment of narcotics. The temporary relief afforded by these drugs is very apt to lead those who suffer from nervous sensations to put too much trust in and resort too frequently to them. In the long run they prove most destructive to health. Their use has of late become so frequent as to threaten society with a serious evil. It has been boldly contended that chloral is to be found in the work-boxes and baskets of nearly every lady in the west end of the metropolis, "to calm her nerves." No doubt this is an exaggeration, but it is a fact that New York chloral punch had become an institution scarcely a year after the introduction of chloral into medical practice, and now it turns out that Germany—"sober, orderly, paternally-ruled Germany"—has such a thing as morphia disease spreading among its population. The symptoms are not unlike those of opium eating. Experience suggests that persons suffering from this disease should at once be deprived of the drug. Their willfulness and liability to relapse, however, are so great, that it is said that only about twenty-five per cent. have been seen to recover in a large series of cases.—*Cassell's Magazine.*

WHAT CHANGES DOES PHYSIOLOGY DEMAND IN OUR SCHOOL SYSTEM?*

By T. Newell, M.D.

I shall not attempt to answer this question comprehensively in a brief paper. That something should be done to improve the physical condition of our population is evident not only to every physiologist, but to every thoughtful mind. Signs of a wide-spread degeneracy are obvious, especially among the younger portion of our population. There is a palpable want of stamina manifest either in gait, bearing, voice or frame; there is a lack of development of the muscular system, in fact, of all the organs of the body except the brain, which often, in the young, acquires a precocious growth. They do not possess that physical calibre from which we have reason to expect healthy offspring or arduous and sustained labor. Physical deformities are not infrequent, while minor physical defects are lamentably common. The pulse tells us that the great central organ, the heart, is weak and flabby. The veins of the extremities are superficial, the temperature of the body is low—hence so many are unable to withstand the weather. The skin is parched and dry, the hair and whiskers are scanty or scrubby. The teeth of children no sooner make their appearance than they begin to decay. Intemperance, lunacy and crime are thought to be increasing, and people are inclined to run into all kinds of excesses.

Is the school system at fault for all this? By no means. Education is largely to blame, and the schools partly.

Objections to our School System.

First. It fails to do its best to prepare children for usefulness to themselves, the community and the State. Hitherto it has developed the brains of children and ignored the bodies. Mentally it has been a success, physiologically a failure. Its tendency is to develop all the physical evils enumerated, and in this respect greatly to unfit the young for the duties and destinies of life. Parents can make their own offspring just as unhealthy as they please, the schools must take them as they are, and should educate them comprehensively—physically, mentally and morally.

Second. The schools increase the hereditary tendency to disease. They are a prolific cause of consumption, that direful scourge of our race. Zeemsson, in his great work on the Practice of Medicine, treating of the causes of this disease and of bad air as a prolific cause, says: "The contamination of the air we find very strikingly exemplified in school-rooms, in which undeveloped youth, with growing chests and lungs, spend daily as many as six hours, in a sitting pos-

* Read before American Social Science Association, September, 1876.

ture. This air is breathed by children, some with catarrh of the air passages, and others with well-marked and far-advanced pulmonary consumption, not merely to their own disadvantage, but also to that of others. There is no condition which is more favorable to consumption than lack of fresh air and exercise. Young children should therefore be sent out-of-doors as much as possible, because the air of a room, however large it may be, cannot compare in freshness to external air. Compulsory attendance at school is doubtless a necessary provision, but the State and the community are under obligation to see to it, that they are healthily located, the school hours reasonably short, and a sufficiently long recess given to exercise in the open air."

The schools, by unduly developing brain without muscle, greatly increase the hereditary tendency to insanity.

Third. The long hours of school confinement and intellectual effort are largely in excess of the capacity for bright, profitable mental work of the children of the ages of those usually taught in our public schools, and are therefore in violation of the conditions of true mental culture.

The mind has certain conditions of growth, which ought to be carefully observed, in order to adapt the amount of instruction to the power of receiving it. The capacity of attention grows with the body and is increased by skillful cultivation. It is stated by the very best authority, and is doubtlessly nearly correct, that very young children can receive lessons of one or two minutes' length only; that with increasing growth and cultivation their capacity of attention is increased to five minutes, then to ten, and that from five to seven years of age to fifteen minutes, and that by the tenth year a bright, voluntary attention may be got to a lesson of twenty minutes, and at twelve years of age to twenty-five minutes, and at fifteen years of age to about half an hour. Periods of attention may be prolonged by skillful teachers and interesting lessons. But it is declared by observers that prolonged attention beyond the average limits, is generally at the expense of succeeding lessons. It is further stated, that about the age of ten or twelve, or a little more, the capacity of bright, voluntary attention is exhausted by four varied lessons on subjects requiring mental effort of half an hour each, in the forenoon, with intervals of relief. In the afternoon the capacity for voluntary attention is generally reduced one-half.

This ability for mental effort may vary with the weather, being greater in cold weather than warm; with the ventilation, lighting and warming of a school-room; with the bodily strength and weakness. It was found that those of the greatest weight, strength and stamina had the greatest power of attention; thus robust children of rural districts, though slower in receiving ideas, were brought up to equal capacity and to greater retentiveness than the children of the town. These general results were collected by Edwin Chadwick, C.B., of England, from the experience of schools comprising altogether between 10,000 and 12,000 pupils, during a period of from twelve to fifteen years.

Then two hours in the forenoon and one in the afternoon is as long a time as children can be profitably employed in school. This exhausts the powers of voluntary attention of the older children of our public

schools. If this be true, beyond this attendance for purposes of intellectual improvement is useless and worse than useless. But what shall we say of the younger scholars of our schools, from five to eight, who are only capable of bright, voluntary effort of periods of ten or fifteen minutes' each duration, with long intervals of relief? The practice of confining such, often in overcrowded or poorly ventilated rooms, in vain attempts at memorizing, is, in the light of physiology, an abomination which ought not to be tolerated in a civilized land.

Fourth. The present system of long hours of sedentary mental effort, beyond their proved ability for application, is mentally injurious, by inducing weariness and disgust of matters taught, and by forming dilatory, diffused, slow habits of thought, and is productive of indecorum, insubordination and truancy, not infrequently provoking chastisement.

By attempting to goad on the minds of children beyond their proved ability for application, they become exhausted and disheartened with study; by keeping them confined to uncomfortable seats, they get tired of sitting and restless; by inhaling impure air, they become drooping and dull, stupid and slow; disorder and neglect of lessons are the result; reproof and sometimes punishment follow, which only increases without removing the evil. Loss of interest in studies, school, teacher, and truancy, are the natural consequences. Mental dyspepsia is produced, or even nausea, no matter how skillful the teacher. The child in many cases gets to hate the school and teacher, and will use his best efforts to annoy him, and finally looks upon the school as a prison, from which, when released, he runs and leaps for joy, and will try to keep away from it. Naturally enough, he prefers the fields and streets to confinement for long hours in poorly-ventilated school-rooms. Or if, with strenuous efforts, he drudges through the term, he is ready to throw aside his books in disgust. Hence so great a proportion of children are not found in school. More than one-half of the children of Rhode Island are not in regular attendance on the public schools.*

Fifth. However good the sanitary condition of a school, however well ventilated, lighted and warmed, the usual period of confinement of young, growing, elastic children, is in direct violation of the teachings of nature and physiological laws.

Movement is a constant characteristic of a healthy child—a desire for change of bodily position, for muscular effort. These movements are frequent at first and longer as growth advances, alternating exertion and repose, with manifestations of pleasure when allowed free scope and discomfort when long restrained, this discomfort and mental irritation being evidently a remonstrance of nature against her plainest demands. If allowed freedom in action at this period of rapid growth, they acquire a glow of health and a speedy increase of strength, but if restrained they become feeble and puny.

Not only the functions of nutrition and growth proceed more rapidly and vigorously in childhood and youth, but also the production of the interchangeable agency usually denominated "nervous force."

* Official Report, 1876.

This is naturally and healthily converted into muscular force, at short intervals during the active and waking period of a child's life, it instinctively using its muscles to relieve the brain of its accumulated force. Caged animals bound against their prison bars and sullenly stalk to and fro to accomplish the same thing. A child, being restrained in its muscular movements, finds relief to its overcharged nervous system in violent emotions, irritability, naughtiness, unruliness, or a flood of tears. Six hours' confinement of young children in periods of three hours each, and during these periods of constrained muscular inactivity, continuous mental labor or attention, is evidently not only unpsychological, but unphysiological, while the duties of teachers are plainly at war with nature, in their efforts to suppress the plainest demands of nature. When the pale and weakly school child fails in health, natural freedom leads to improved health.

The tissues of growing organs, especially the brain fibre, are too soft to bear long continuance of their proper functions. They have not attained mature firmness. The brain soon tires, and if mental application is too long continued, it becomes unhealthily affected, its growth is interfered with, and the child is, to a certain extent, spoiled. Domestic animals, as colts, if overwrought while too young, are injured, their development is stopped by premature over-exertion.

Sixth. Our school system is very injurious to teachers. Under the present long hours, the teacher finds it impossible to command the attention of pupils. He becomes exhausted and weary. His efforts are labor and drudgery. Energy and spirit cease, especially in the latter part of the day. His work seems useless. He feels exhausted after his work is done. Year after year passes away. With the female teachers especially ill-health is the result, and she loses her activity. The school lacks of success, and she retires, with spirit broken and health infirm, to seek some other employment or none at all. This is the career of far too many female teachers of our country.

Having noticed the prominent physiological objections to the school system, we are now prepared for the question, and minds that have carefully weighed them are prepared for, and perhaps anticipate the answer: What changes does physiology demand in our school system?

Imperatively that the hours now devoted to mental culture be greatly shortened, and the time freed be given to systematized physical training or some industrial employment.

By this change the above objections to our school system will lessen in importance or disappear.

By this change, what of success in mental training will a child lose? Nothing.

It having been proved, by experience, that three hours a day is the physiological limit of a child's capacity for profitable mental effort, it follows, consequently, that a child will make as good intellectual progress in three hours a day as he will in six.

To persons who have not thought much upon this subject, it may seem a startling statement, that teachers are spending fully half of their school time in wearing themselves out to worse than no purpose, and the State is worse than squandering hundreds of thousands of dollars annually; but to persons who have investigated this matter

there is nothing startling about it—except, perhaps, the blindness that advocated any other but the half-time system.

This system has been in operation in England for over thirty years, on a very large scale, in connection with physical training and a great variety of industrial employments, with this extraordinary and most unexpected result, that children who are at school only half time, in intellectual attainments equal those who are at school all the time. Such is the testimony of reliable and faithful school inspectors, distinguished and experienced teachers, head masters, school superintendents, members of Parliament and clergymen, who have observed carefully, and studied this system. This testimony is found in Parliamentary documents. Such is the testimony of Dr. Carpenter, of Montreal, himself an educator and an educated man, a brother of the great physiologist, who spent nearly a quarter of a century in the midst of the half-time schools, and carefully observed their operations. Such is the success of the few half-time schools that have been in operation on quite a limited scale in this country. If, then, a child will lose nothing of mental training by this change, what will it gain?

First. We have unquestionable testimony that a child will learn *more* in *one-half* the time in connection with physical training or industrial employment. This has been proved in the same schools, with the same teachers and scholars, who have been changed from half to full time and *vice versa*.

Children go to their physical exercises with the greatest relish; and after these are over, they return to their studies with brighter, fresher, closer and more efficient attention. These exercises quicken the intellectual faculties of pupils, who seem anxious to get along, and more earnest in their efforts. They study with more spirit, energy and success, and their very success stimulates them to renewed effort. They thus form a more valuable habit of mind, of quick, concentrated thought. Such is the testimony wherever this system has been in operation. We all know that the best rest for an overtasked mind, is bodily exertion. We have testimony from Sweden that children who are inapt at mental work, after having exercised at gymnastics, instead of being dull and opposed to study, become lively and disposed to receive instruction.

Second. This change in our school system would remove or lessen congenital defects or bodily weaknesses, and increase the physical stamina, the working ability and productive industry of the State.

It would lessen or remove physical deformities, hereditary tendencies to disease, as consumption or insanity. It would secure co-ordinate development of all the organs of the body, as brain, muscle, bone, heart, etc., also the ability to work, walk and withstand the weather. It would not only produce beauty and symmetry of growth, expand the chest, invigorate the muscular system, but improve the bearing, behavior, personal appearance—in short, the whole condition —and tend to form habits of prompt obedience. This is especially true of military drill.

The necessity of physical development of the young has crept upon the friends of education almost unconsciously. Half a century or more ago the bodies of children were developed at home, the girls in domestic duties and the boys in out-of-door muscular employment.

The school houses were well ventilated, and often at quite a distance from the homes of children, and the schools from three to six months in a year. Since that time the old fire-places, cracks and crannies have been closed up, and the schools lengthened to nearly nine and a half months in a year, and brought almost to the doors of children, and their minds crowded to their utmost capacity. They have ceased to find muscular development at home. The play-grounds are limited, at least in cities, and home duties do not require much muscular effort. Hence, a new duty is imposed upon the schools—that of physical training.

Third. This change would be productive of decorum and happiness of a school, and add greatly to its attractions.

It would render less laborious the work of governing a school—a help to school discipline. We have reliable statements relative to some large schools, in which physical training, having been practiced, was discontinued, with the effect to make these schools quite different places—disorderly—so that it had to be resumed. This change, by increasing the attractions of a school, would call back the truant.

Fourth. The moral influence of this change would be salutary.

It would elevate the moral tone of a school. There would be less temptation to deception, intrigue and disobedience. It would prevent sexual irritations, the result of long sedentary confinement. It would tend to develop a vigorous population, symmetrical in growth, and less inclined to run into all kinds of excesses.

Fifth. By this change our schools would be less liable to give rise to epidemic diseases.

Says Zeemsson: "If the child have not already contracted the epidemic diseases of childhood at home, the danger of such contagion will hardly be escaped during school life." Says Miss Florence Nightingale: "I have unquestionably seen, in my schoolmistress days, bred under my eyes and nose, scarlet fever in the higher class even of boys' school. Every one has seen the same process as to measles in all the rich and poor schools." These affections, whooping-cough, measles and scarlet fever, the bane of childhood and the terror of every family, fill innumerable early graves and leave incalculable life-long traces of their ravages. They not unfrequently lead to consumption directly, or by producing scrofula and glandular tuberculosis supply the foci for subsequent infection. The school hours being lessened one-half, the air of the school-room remaining more pure, and the physical condition of children being greatly improved, the danger of epidemic diseases would be diminished quite or more than one-half.

Sixth. This change would impart aptitude for honest and sustained industry.

Industrial training with mental culture will make pupils better and more apt at business, more alert and prompt at work. Boys from the half-time schools, in England, are generally preferred to those educated at other schools. We are told that the efficiency of labor is enormously increased by this system. It tends, much more than the present system, to form habits of life bearing on the realities of life; to break down the barrier between idleness or genteel indolence and

work—in short, to fit the young, both in body and mind, to get an honest living. Says Dr. Carpenter: "The industrial part uses healthfully, pleasantly and profitably the animal energies of the growing boy."

Says Miss Mary Carpenter: "The faculties are strengthened and trained in other ways by industrial occupation, and many powers are developed comparatively untouched by book learning. Education thus becomes more real and knowledge more fixed in the mind, and more likely to be permanently useful."

Seventh. This change would be very beneficial to teachers.

Benefits would arise from their being relieved from the drudgery of securing the attention of pupils and of maintaining proper decorum, from the improved atmosphere in a school-room, and from physical training, should they participate.

Eighth. This change would be especially beneficial to the girls of our schools, inasmuch as the present prolonged system of sedentary confinement inflicts upon them more extensive and grievous bodily injury, on account of their indoor life at home, and their average longer school life.

It is well known that signs of physical decline are pre-eminently marked in young women, especially in their inability to work, walk, produce and rear children, to withstand the weather, in the decay of teeth, in the increase of diseases peculiar to females, in the increase of death from child-birth, of ailing mothers and unhealthy children. How important, then, that the future mothers of our race be possessed of physical stamina, of a capacity for marriage and maternity, of a capacity for making home happy. Yet these things are impossible with the physical incompetencies of a large proportion of the young women of our country, especially of the educated class in easy circumstances. The importance of physical training to girls cannot be overestimated. It should go hand in hand with mental training, to secure a symmetrical growth. For them, especially, physiology adopts the significant prayer of Juvenal, as embodying the sentiment and practice of the ancients, and as their all-important object in life, "Ut sit mens sana in corpore sano"—that a sound mind may be in a sound body.

———o———

A Birthday Party was given a little boy in Brooklyn recently, and one of the guests who had occasion, thus described it to a physician the next day:

"First we all had some lemonade and sponge cake; then we had birthday cake and ice cream; then we had lots of mixed candies and some nice chocolate; and then we had some more lemonade and birthday cake and caramels; and then Hatie Thomas and I had an awful stomach ache, and Johnnie's mother and Miss Mary mixed a big glass full of peppermint water, and after they made Hatie and me drink all we could of it, they gave the rest all round to the others, and Johnnie's mother said she guessed we had better go home."

FIRE-PROOF BUILDINGS.

To the Editor of The Sanitarian:—In your very interesting notice and article, in the January number of The Sanitarian, on the Brooklyn Theatre, and the great loss of life by that most awful and most horrible affair, you make very proper reference to the civil and State authorities, and how they "habitually neglect the means for the preservation of human life throughout the State and the nation."

I desire to say, in few words, that none of the means and suggestions that have been made, growing out of that great, dreadful and dire calamity here in Brooklyn, for the safety in future of such buildings, such as fire-proof scenery, etc., offer or afford any protection or safety whatever. They are all mere expedients, which will fail in time of real need.

The only safety is in fire-proof buildings; buildings containing no combustible materials. This is simple, and puts the ax at the root of the great evil or difficulty; there is no safety in anything short of this. The State and city authorities should at once pass a law that all public buildings, city halls, court-houses, public schools, offices of record, churches and theatres, should be built fire-proof, without any combustible materials in them. The first cost will be something more, but in the end the cheapest. What would become of all the dear little people in one of our large public schools, with a population of five hundred or a thousand of these little folks, in case of a fire? How many could get out, and how many would have to stay behind, and be burnt up? Under this rule, there might be a less number of theatres built, but they would be of a better order and of higher character, and their entire safety would soon give them reputation and favor with the public.

The danger to life in burning buildings is from *within*, not from *without*. See the fate of the Havens family, at Fort Washington, N. Y., some years ago, and that of the Steiner family, in New York, recently. The great destruction and waste of property by burning buildings demands a new order of fire-proof buildings, as far as can be in all large and costly buildings, both in city and in country.

In ten years past, twelve theatres and more than two hundred churches have been burnt in the United States, many churches of great value and precious memory; no money can or could replace the precious and valued memorials which perished with them. Within a few weeks three churches have been burned, one in Westchester, N. Y., of great value, with all its valued memorials, one at Morristown, N. J., and one in Vermont. Now, why should this great destruction and great loss of property and substance be continued and perpetuated, when it can be easily prevented by the construction of fire-proof buildings? The country is better able to make fire-proof churches than to bear the loss of their destruction by fire.

I hope Mrs. Stewart and Judge Hilton will make the great memorial church at Garden City fire-proof; it can yet easily be done by changing the material of the inside work, making it of stone, brick and iron inside, instead of wood. It would be a great misfortune, in a few years to come, to have that memorial building swept away by fire. The Rev. Dr. Talmage, of Brooklyn, says the pulpit and the press can do a great deal towards reforming present evils. Let them begin on this, and they will make enough or save enough to Christianize the world, in the saving of public and private property from destruction by fire, to say nothing of the saving of life.

Brooklyn, Feb. 14th, 1877. E. F. PECK, M.D.

———o———

Wood Rendered Incombustible.—It has been demonstrated by the most rigid experiments that wood immersed in a "pickle" of a solution of tungstate of soda cannot be ignited under any of the ordinary conditions to which it may be exposed. The tungstate is made by the addition of tungstate of lime to hydrochloric acid and salt, affording as a by-product chloride of lime in large quantities. The action of the tungstate upon soft woods is to render them quite hard as well as incombustible, and it also acts as a preventive against dry rot.

Sticks and boards of the prepared wood have been saturated with kerosene oil and set on fire; the oil burned off entirely without igniting the wood. Two small houses have been built, one of ordinary pine wood, the other of the prepared wood, and fires of great urgency kindled in each. The one of ordinary wood was quickly consumed, while the other was left only slightly charred.

There is no doubt that all the wood-work of theatres can be made practically incombustible, and at no very great cost. A bath of the tungstate of soda, consisting of several thousand gallons, can be employed, and sufficient wood to construct all the scenery and appliances of a theatre can be prepared in a few weeks' time, and the painted canvas also can be treated in the same way. Even if oil colors were used on the canvas, we think it could not be readily ignited.

The attention of theatre managers should be called to this subject, and the authorities of cities should insist upon having every means used which modern science suggests to prevent fires in public buildings.—*Boston Journal of Chemistry.*

———o———

Kerosene Lamps.—A merchant returned home about two o'clock at night, and found his wife lying on the bed groaning heavily and unconscious. She was waiting his return, and at last, tired out, laid herself on the bed, after turning down the wick of a lighted kerosene lamp as low as possible without extinguishing it. In this position of the wick, if the oil is bad, a vapor mixed with an innumerable quantity of specks of soot diffuses itself through the apartment, and so covers the eyes, nose and respiratory organs, that on falling asleep one runs a risk of suffocation. It is always advisable, therefore, in the use of kerosene lamps, to allow the wick to burn brightly or to extinguish it entirely.—*Wiener Medicinische Presse.*

THREE GOOD HOUSES.

Several years ago the writer of this article had occasion to find a new domicile in one of the favorite suburban resorts of New York city people, and finally settled upon a large cottage in a very healthy town. This cottage was better ventilated than even wooden houses are likely to be, but as pure air always seemed cheap to the writer, even though an extra large coal bill was incurred, the cottage seemed particularly desirable by reason of the fault alluded to. When winter arrived, however, not even loosely framed doors and rattling windows admitted enough pure air to keep the occupants awake and bright through the short evenings of a family which always retired early. The writer occasionally imagined that he detected an unpleasant odor at the register, and some friends, to whom he mentioned his supposition, suggested dead mice in the pipes which conveyed heat from the furnace to the registers; others suggested that a cast-iron furnace was at the bottom of the trouble; still others (who were promptly withered by a glance from the writer's better half) suggested a dirty cellar. The writer finally learned that the cellar was occasionally damp—and he noticed that its floor sloped very gradually toward the center. Putting both facts together, he was not surprised to find a drain, *directly under the furnace*, to carry off water; this drain led to the cesspool, and when the furnace was in operation the foul gases of the pool were sucked up by the furnace and conveyed through the house. This house stood on a good street, was built for occupants with purses of reasonable length, and passed as one of the best houses that could be hired in the village.

Moving from this house to another which had long seemed attractive, the writer soon found that unless his cellar windows were always open and a good draught passing through them, a bad smell would find its way into and through the house. An examination of the cellar showed that this receptacle was generally very damp, though why it should be was not apparent, for a drain started from one corner and ran to a brook not far away, and at a respectable descent. It was finally discovered, however, that the water in the well (which was near and in front of the house) was often above the line of the bottom of the cellar, and that although the house stood at the foot of a valley, it had no exterior or bottom protection in the shape of drains. It was simply impossible to keep the carpets, bedding, walls, etc., of this house from feeling damp, even when a steady fire burned in the furnace; and the loss of a child was attributed by physicians to malarious exhalations from the cellar. The trustees of this house were practical plumbers and members of a public health association.

A handsome high-priced house was then purchased from a rich and reputable citizen, under whose personal supervision it had been built. The ground on which it stood was rather low, but a well cemented foundation wall and cellar seemed to defy dampness, while a system of traps seemed to shut off unwholesome exhalations from waste water. After the first heavy fall of rain, however, the water from the well was unpleasant both to the palate and nostrils; the fault being attribut-

ed to surface drainage, the curbing of the well was raised a little. Finally, at the end of a very dry month, the taste and odor disappeared, and the last drop of water in the well disappeared soon after. Laughing at this feeble attempt of the Fates to torment them, the occupants drew upon their well-filled cistern ; here they encountered odors and tastes more repulsive than they had found in the well. "Fresh cement always makes water taste bad," said a practical neighbor, so the cistern was promptly pumped dry and washed out, and the neighbor aforesaid was rewarded for his suggestion by having his own well and cistern laid under contribution until the next rain-fall. But somehow the faculty of that cement for spoiling water was remarkable, and we rejoiced when winter storms gave us a full well once more. For six months the cistern was undisturbed, except on washing day, although the well occasionally yielded offensive water; at last, however, the well failed in the dry month of July, 1876. Once more the cistern was approached; the first strokes of the pump brought water that was as brown as coffee and as offensive as stable drainage. Radical reform measures were immediately resolved upon, and a plumber engaged to apply them, with the following results: We learned that a cesspool which received all the kitchen drainage, including the water in which dirty clothing had been washed, was within two feet of the cistern and eight feet of the well; the overflow pipe of the cistern communicated with this pool, the dimensions of which pool were about two by five feet; the kitchen drainage of an ordinary washing day could not with sufficient rapidity soak into the ground out of so small an inclosure, so it flowed into the cistern, while much that went into the ground found its way to the well. The gentleman under whose supervision this last mentioned house was built was frequently asked about the location of the cesspool (for the well was dug after the house was purchased) and always indicated the whereabouts of a larger and quite remote pool, allowing the owner to sink a well in the immediate proximity to the smaller pool; the mason who had dug and laid the pool and cistern came once to clean and repair the latter, but never suggested the cause of the trouble. The damage done to the physiques of the several members of the family (some of whom are peculiarly delicate children) cannot easily be calculated, if indeed its full measure has yet appeared. The law—State, national and moral, forbids that the builders of any of the three houses mentioned shall be slain by the persons injured, and it affords them many a chance of escape in case of suits for damages. But if the experiences recorded have befallen the lessee—a man with whom good ventilation, perfect drainage, and pure water are hobbies—in three short years, and in houses apparently excellent, what must be constantly happening to people who are careless on these points, and who consider a house attractive in proportion to the smallness of its rent? How many householders are there, who, untiring in their efforts for the good and comfort of their families, are being steadily and successfully fought by deadly enemies underground? How many thousands of the "sad and mysterious dispensations of Providence" may be traced to ignorant or unscrupulous builders and their employees?

This much the writer has learned by sad experience—to resolutely trace unpleasant house odors to their source, to discover some cause for the evening lassitude which is common in many families, and to

hurry to the physician, for analysis, a sample of any drinking water which seems in any way objectionable.—*The Christian Union.*

———o———

The Population of the Earth and the Progress of Hygiene.—The most trustworthy estimate of the number of people in the world for the year 1876, as furnished by statisticians, is 1,423,917,000. This is an increase of over twenty-seven millions on the estimate of 1875, but the augmentation is not due entirely to the excess of births over deaths, but largely to the obtaining of more accurate information regarding the population of regions hitherto little known, and to more perfect census returns from all countries.

Asia is still the home of the majority of the human race. About four-sevenths of the earth's population, or 825,548,590, is Asiatic. Europe comes next with over a fifth, or 309,178,300; Africa with about a seventh, or 199,921,600; America with less than a sixteenth, or 85,519-800; and finally Australia and Polynesia, with the very small fraction of 4,748,600 people. Europe is the most densely populated, having 82 persons to the square mile; Asia, 48 to the square mile; Africa, 17½, and America and Australia, 5½ and 1⅛ respectively.

There are 215 cities with populations of over 100,000; 29 of half a million or more, and nine containing a million or more inhabitants, each. Of these last, four are in China. New York—including Brooklyn, as we may rightfully do for purposes of comparison—and the greatest cities of the world stand in this order: London, 3,489,428; Paris, 1,851,792; New York, 1,535,622; Vienna, 1,091,999; Berlin, 1,044,000; Canton and three other Chinese cities, one million each. New York being third in the list of great cities, without counting our New Jersey overflow.

Though there are not at hand statistics upon which to base an accurate statement of the fact, yet it is the general conclusion of all observers that the average longevity of the human race has largely increased within a hundred years. The reported death-rates everywhere support this conclusion; and it is thoroughly proved that the devastations of epidemics are nothing like so great now as formerly. Medical science, in its preventive aspect especially, shows a steady advance in its ability to discover, prevent and check diseases which in past ages devastated large communities. In London, for example, two centuries ago the mortality was 50 per one 1,000 and the average duration of life was only 20 years. The death-rate, 1660–79, 80; 1681-90, 42.1; 1746–55, 35.5; 1846–55, 24.9; 1871, about as at present, 22.6, and the mean duration of life is now 42 years. The same holds good throughout England. There and elsewhere in Europe, as also in this country, the subject of public hygiene has received great attention of recent years, and its difficulties are being steadily overcome. Men unquestionably live longer now than their ancestors lived, and have better average health, and that our descendants will gain on us in these respects there is but little reason to doubt.

As to great cities, New York is easily third in population, but behind all England, and English cities, many other European and most of other American cities, in health and average longevity. If it took in all its children, it would press hard on Paris for the second place in population, and before the next century is reached, or before it has advanced far, will probably know no superior in population except marvelous London.

EDWIN CHADWICK, ESQ., C.B.

Never at any other period in the world's history has the human mind appeared to be so active, or made so great advances in every branch of natural philosophy, produced so many inventions promotive of the conveniences of life, or made such long strides in the progress of the physical sciences, as during the present era. And of all the great enterprises by which this era is signalized, there is none which more clearly stamps a character of real and substantial progress, than the great sanitary movement which started in England about forty years ago, under the leadership of EDWIN CHADWICK.

It is true, we might go back of this era, and all along through the ages which have passed pick out here and there evidences of some attention to treating health on principle, but up to the time of the subject of this sketch, there was no comprehensive grasp of the economy of human health; no penetration into the sources of preventable sickness and mortality; no formulated methods of work, by which causes could be measured by results.

The carrying out of the "New Poor Law," in England, may be regarded as the true starting point of the inquiries which brought Edwin Chadwick to the surface as the pioneer in the collection of evidence on certain social phenomena favorable to sickness, pauperism, vice and crime. Then it was that evidence was first logically collated proving by incontestable testimony that disease was not inevitable—that its physical causes were removable. For the inquiries which followed this evidence Mr. Chadwick had already done much to prepare the way. His labors for the public weal had already been such as to attract the attention of all public economists; and the "Blue Books," in which some of these labors are conveyed to the world, are amongst the most valuable and interesting papers published by Parliament.

Mr. Chadwick was called to the bar on the 26th of November, 1830, by the Society of the Inner Temple, when he was about twenty-eight years of age. Whilst engaged in the study of the law, he associated almost as much with medical as with law students, and he took an active interest in medical controversies.

His first public writing of which we have any knowledge was an article in the *Westminster Review*, in 1828, on Life Assurances, controverting the doctrines of several eminent actuaries as to certain assumed laws on which tables, more advantageous to their companies than to the public, were founded, and contending that better data, having reference to the varying circumstances under which the population was placed, were required, especially for the safety of the funds of the laboring classes invested in their benefit societies. This article was reprinted, and published separately.

In 1829 he was engaged as a contributor to the *London Review*, and wrote two articles on public administrative subjects: one on a Preventive Police, in which he opened the important subject of the practical means for preventing crime, which he was understood to have studied, and to have been desirous of developing more fully. The other article was on the administration of Medical Charities in France, in which principles for the general administration of public charities were put forth. This article was also reprinted, and has been frequently quoted.

These writings on administrative subjects attracted the notice of Mr. Jeremy Bentham, and led to a strong friendship between Mr. Bentham and Mr. Chadwick. At that time Mr. Bentham was preparing a draft of an administrative code, in which he desired Mr. Chadwick to set forth the functions of a Minister of the Public Health and a Minister of Police. Other occupations at the time prevented Mr. Chadwick from performing the task assigned to him by the great jurist, who afterwards offered to place Mr. Chadwick in independent circumstances, if he would engage to devote himself exclusively to the advancement of his works. This offer was, however, declined; but Mr. Bentham, in his will, mentioned him in terms of affection, and bequeathed to him a part of his library and a small legacy. When Mr. Chadwick has entered into any subject, he has professed to have investigated the facts *de novo* to the extent of his means, and to have based his conclusions upon them, and not upon any preconceived opinions of any school. He was about to offer himself for practice at the common law bar, and was, at the same time, under an engagement to the late Mr. Sutton Sharpe of the Chancery bar, and several eminent living law reformers, to take upon himself the editorship of the *Jurist*, which was established by them to promote the advancement of law as a science, when Lord Grey's Government issued the Commission of Inquiry into the administration of the Poor Law, and Mr. Chadwick was applied to and engaged to assist it as an Assistant Commissioner. The results of his investigations in the rural districts very early attracted the most prominent attention. He was, for a time, taken away from this Commission, and pressed into the service of another—the Commission of Inquiry into the Labor of Young Persons in Factories—of which Mr. Tooke, the author of "High and Low Prices," Mr. Chadwick and Dr. Southwood Smith were the Central Board.

The previous agitation, it may be remembered, was simply and solely for a reduction of the working hours to ten. The conclusion of the Report was that the working hours of the adults were in course of reduction, and that on their behalf no case had been made out; but that for the younger children ten hours were too much, and precluded the manufacturing population from the means of education. In respect to the children, the Commissioners reported that interference was required; and they recommended a provision of special schools for that class of children; and also a protective inspection, to insure that the provisions were fully carried out. The measure was carried through the House of Commons; but the provisions for special schools was thrown out in the House of Lords, by an opposition headed by the Marquis of Salisbury. On the occasions of extensive

riots in the manufacturing districts, it had been pointed out that the most dangerous mobs were composed chiefly of young persons of an age to have gone through the special education intended to have been provided, and which would in all probability have prevented the outrages, had the measures proposed in 1832 been carried out in their integrity. The foundation was then laid for the system of local inspection which has since been extended to the labor in mines and other branches of industry; and it has been the subject of continued representation to provide measures for education.

With regard to the amendment of the administration of the Poor Law, various measures were proposed, all of them dealing with the administration parochially, except the set of measures proposed by Mr. Chadwick, which were supported by a large mass of evidence, and adopted by the Commissioners. He was appointed one of the Chief Commissioners, that he might prepare the Report. This had been delayed by his labors on the Factory Commission, and he was largely assisted in its preparation by Mr. Senior. These measures might be, in themselves, the subject of a history.

Of the set of measures proposed, those which were adopted were chiefly for the direct repression of abuses, and part of the remedial measures; but, as Mr. Chadwick proposed them, they were accompanied by large measures of prevention. As respects the young, he enforced the necessity of industrial training, and indicated the establishment of district schools; and as to the adults, the entire abolition of the Law of Settlement. He took occasion to vindicate his original propositions on this topic, in several days' examination before a Committee of the House of Commons, when he developed the servile condition of the agricultural laborer, and the moral and social, as well as the economical, importance of setting free the agricultural labor market. In a speech before the tenant farmers, he expounded his views on this subject, which have been extensively adopted by leading agriculturists. Amongst the extracts from the evidence which he had collected, and which was published in 1832, portions of evidence are given to establish the conclusion of the economy of using the known means of preventing disease, as one means of preventing pauperism, and reducing the charges on the Poor's Rates. In 1838, when typhus was rife in the metropolis, he took occasion to re-urge the subject upon attention. He obtained the consent of the Poor Law Commissioners to a special inquiry, on instructions as to the prevalence of certain physical causes of fever in the metropolis, which might be removed by proper sanitary measures. The special inquiry was made by Dr. Arnott, Dr. Key and Dr. Southwood Smith. The evidence then elicited awakened attention to the subject. Whatsoever labors Mr. Chadwick might have given to it were interrupted by his duties, under a previous appointment, as a Commissioner for Inquiring into the Constitution and Means of improving the Constabulary Force for England and Wales. His colleagues were the Speaker of the House of Commons at the time, and Colonel Rowan, one of the Commissioners of the Metropolitan Police Force. They made their first Report in 1839 on the Constitution of a Constabulary Force. It is understood that a part only of the evidence collected was presented, and that another Report on the Measures Preventive of Crime was

in preparation; but Mr. Charles Shaw Lefevre was taken away by his appointment as Speaker; and the sanitary inquiry having been extended from the metropolis to the whole of England and Wales, Mr. Chadwick took charge of it, and, over and above the daily and laborious duties of his office as Secretary to the Poor Law Commission (to which he had been appointed in 1834), prosecuted it unremittingly until he had completed the Sanitary Report. Medical men practicing in Manchester, Liverpool, and other towns, avowed that it displayed to them conditions of the population, and the extent of the operation of noxious influences, of which they, though living amidst them, had not previously been aware. The remedies were systematically developed, and extended views taken of the relation of the town and rural districts, which are fully detailed in the Sanitary Reports of the "Blue Books."

Education of Factory Children.

The result of his inquiries in the Factory Commission led him to propose measures, which were in part executed, for reducing the working time of children under thirteen years of age to six hours a day, and for insuring their attendance at school the residue of the time, say three hours. The children under this provision are called "half-timers;" and it has turned out, according to Mr. Chadwick's investigations, that in well-conducted schools their attainments are quite equal to those of the "full-timers," who attend school six hours daily, while in aptitude for the application of their knowledge they are said to be superior. As they gain in bodily condition by the reduction of their physical labor, so they do in mental condition by the reduction of the time devoted to mental labor.

Mr. Chadwick made a close examination of the best of the long-time schools for young children, and found, upon the testimony of the most intelligent teachers, that they could not keep up voluntary attention to study beyond two hours in the morning, and one in the afternoon. By force, even, they cannot get more than an additional half hour of real attention, and that half hour proves in the end a mental mischief as well as a bodily injury. From these facts it would seem to follow, as he contends, that our school systems are a violation, in this respect, of the laws of physiology.

Boys are enabled to repair the injury of undue mental work, to a certain extent, by their athletic games. Not so with girls. In boarding-schools they are fastened to their sedentary occupations often eight hours a day, with but slight intervening relaxation or exercise. Mr. Chadwick finds that the daughters of mothers who have worked, but whose fathers have got on in the world and have sent these daughters to day or boarding-schools, and kept them from work, are shorter and generally of inferior strength to the working mothers; that the proportion of mothers of the well-to-do classes who can suckle their own children is diminishing.

The remedies recommended by this gentleman are the reduction of the ordinary school hours by one-half, and the devotion of them either to manual labor or gymnastics; but no form of exercise, he thinks, is equal to the naval and military drill. This he considers both in reference to the future personal welfare of the pupil and to

the interests of the community. Looking to the welfare of the pupil, he contends that the drill is good for the correction of congenital bodily defects, that it gives an early initiation to all that is implied in the term discipline—namely: duty, self-restraint, order, punctuality, obedience to command, and patience; that it renders action prompt and easy, and adds to the efficiency and productive value of pupils in after life. Looking to the welfare of the nation, he maintains that the military and naval drill is more effectively and permanently taught in the juvenile than in the adolescent or adult stages of life, and that, if made generally prevalent, it would accomplish eventually, in a wider and better manner, the object sought to be obtained by volunteer military companies; which, by the interruption of productive occupations, are highly expensive, and that the juvenile drill would produce an immensely stronger and cheaper defensive force than is now produced by any means in use in any nation.

An Interview with Napoleon III.

At the time of the Great Exhibition in Paris, in 1854, a deputation from England, of whom Mr. Chadwick was one, had occasion to wait upon the Emperor at his palace of St. Cloud. We give the account of the interview exactly as reported by one who was present, and it will be found to bring out something of the humor of Louis Napoleon, as well as the peculiarities which characterize Mr. Edwin Chadwick.

The appointment was arranged for Sunday afternoon at two o'clock, and the deputation was punctual.

On entering the audience-chamber, Lord Cowley handed to an attendant the names of those forming the deputation, who took their places in the order in which they were written. The attendant withdrew, and soon after the Emperor entered, accompanied by some of his officers of State. Lord Cowley introduced the head of the deputation by name, who read an address, to which the Emperor replied in familiar terms, and then, approaching the leader of the deputation and speaking to him by name, shook him cordially by the hand and bade him welcome. There was nothing surprising in this, because it was natural to suppose that *his* name might be remembered. But when he passed along the semicircle, and shook each by the hand, and spoke to him by name, without reference to any document, they were absolutely amazed. After expressing the hope that they would enjoy their visit to Paris the Emperor returned to Mr. Chadwick, when the following dialogue took place:

"Well, Mr. Chadwick, and how do you enjoy Paris?"

"May it please your Majesty, I enjoy Paris much, and being here on a special mission, as your Majesty is aware, I shall feel it to be my duty to report faithfully, and to the best of my judgment, on matters connected with the inquiry."

"I hope your report will be favorable, Mr. Chadwick."

"In many respects entirely so; but in others not. All that meets the eye is beautiful, and I find much that is worthy of imitation. But—" and here Mr. Chadwick paused.

"But—I suppose you were about to add, Mr. Chadwick—but all that meets the nose is not so agreeable." (The Emperor here smiled —so did the deputation.)

"In this presence," replied Mr. Chadwick, "I should not have ven-

tured to say so much; but your Majesty has accurately interpreted the thought I wished to convey."

"Could you suggest any remedy, Mr. Chadwick?"

"Undoubtedly, your Majesty! Nothing could be easier than the drainage of Paris. The area of the city is small, and the gradient so good, that the system might be made the most perfect, and the Paris atmosphere the purest of any city in the world."

"Would you drain the refuse matter of Paris into the Seine, as you drain London into the Thames, Mr. Chadwick?"

"No, your Majesty; that has been found to be a terrible mistake, and we are about to entirely change the system. We have in England a town drained on what we consider a model system. I refer to the town of Rugby. The authorities have completed their drainage, and entered into an agreement with an enterprising agriculturist, who pays a certain fixed sum per annum for the entire sewage, of which he takes possession at the boundary of the town, and, by means of pipes laid at his own cost, conveys it to such points of his farm as will enable him best to spread it equally all over his land. And the result is, that he has several crops of grass in each year of immense weight and value."

"Do you mean, Mr. Chadwick, that your enterprising agriculturist spreads that unpleasant stuff on the green grass?"

"I do, your Majesty."

"Then it must be very unpleasant to sit upon!"

The whimsicality of this remark broke down all restraint. The deputation laughed outright, and in their laughter the Emperor heartily joined.

Here was a fine opening for a bucolic member of the deputation, who eagerly seized the opportunity of stepping forward to enlighten the Emperor. He begged to assure his Majesty that it was neither unpleasant nor dangerous to health. It was the nature of all vegetation to greedily absorb the food suitable to it. Sewage matter was the natural food of plants, and—

The Emperor, however, fearing a tedious lecture upon agricultural chemistry, suddenly turned from his new friend, and again addressed himself to his imperturbable friend, Chadwick.

"If your time admits, Mr. Chadwick, perhaps you will kindly proceed, and give me a few practical hints as to the *how* of the case?"

"Your Majesty will allow that, of all places, the greatest demand for vegetables of every variety exists in Paris. To economize labor, and thus lessen the cost of a prime necessity of food, is a question well worthy the consideration of your Majesty. The surrounding land is hungry for the refuse of your city, and every visitor cries, 'Away with it!' By a proper and simple system, arrangements might be made by which, within a radius of twenty miles of Paris, a larger quantity of vegetables might be produced than is now obtained from a radius of fifty miles. Your houses are so high that they are almost like perpendicular streets, and half drain themselves by simple gravity. The gradients are all good, and only require the necessary pipes and a sufficient supply of water. But, in my humble opinion, if your Majesty wills it, the work is half done."

"I thank you, Mr. Chadwick, and the gentlemen present; and if I

can do anything to make your stay in Paris more pleasant, let your wishes be made known through the Minister, and they shall be promptly attended to. I shall appoint a commission to inquire into the question Mr. Chadwick has introduced; and should they find it necessary to visit London for further information, I assume they may reckon upon receiving the assistance of this deputation."

A promise to that effect was given, and here the interview might have closed. But Mr. Chadwick desired another last word, and, moving a step in advance, he said:

"It was the boast of Augustus that he found Rome brick, and left it marble; but it will be a greater, a wiser and a prouder boast if, in the time to come, it can be truly said: 'The Emperor Napoleon the Third found Paris offensively odorous, and left it sweet!'"

The Emperor seemed greatly pleased with these parting words of the sanitary philosopher, and the deputation withdrew amidst general hilarity.

The want of space forbids even a catalogue of the special contributions which Mr. Chadwick has made to sanitary science and kindred subjects; they are scattered all along through England's progress in public economy for the last forty years. The most recent of his contributions which we have received is on the *Economy of Trade*—a paper read at the Social Science Congress, Glasgow, October, 1874, on "*What are the best means for drawing together the interests of the United Kingdom, of India and of the Colonies?*" It is characterized by the same comprehensiveness and logic which obtains in all of Mr. Chadwick's writings, and derives special significance from the subsequent action of the Government in "drawing together the interests of the United Kingdom, of India," etc., which has since been published to the whole world.

The Physical Benefit of Sunday.—Sunday is God's special present to the working-man, and one of his chief objects is to prolong his life, and preserve efficient his working tone. In the vital system it works like a compensation pound; it replenishes the spirit, the elasticity and vigor, which the last six days have drained away, and supplies the force which is to fill the six days succeeding; and in the economy of existence it answers the same purpose as the economy of income is answered by a savings bank. The frugal man who puts away a pound to-day, and another pound next month, and who, in a quiet way, is putting by his stated pound from time to time, when he grows old and frail gets not only the same pound back again, but a good many pounds besides. And the conscientious man who husbands one day of his existence every week—who, instead of allowing Sunday to be trampled and torn in the hurry and scramble of life, treasures it up—the Lord of Sunday keeps it for him, and in length of days the hail of age gives it back with usury. The savings bank of human existence is the weekly Sunday.

Editor's Table.

New York: Importance of a State Board of Health.

The subject of all others which most concerns, though it does not seemingly most interest, the people throughout the State, is the bill now before the Legislature for the establishment of a State Board of Health. Not yet, it is to be feared, do the people generally realize the importance of preventive measures in disease and common calamities, while those with whom they ordinarily intrust the care of the public health are but too commonly the mere representatives of party ascendency for the time being, who, measuring other men by their own limited self-sufficiency, are fruitful in their suggestions of distrust against all who labor for the promotion of public health. Such office-holders are always ready to charge voluntary workers with motives of self-interest, with attempting to influence legislation against the rights of communities; accuse them of overriding the municipal and corporate rights of cities, towns and institutions; of demanding expenditures of public funds on chimerical propositions; with being alarmists, constantly harping on the prevention of disease in order to make capital for themselves, and striving to make themselves functionaries of dictatorial establishments. Wherefore, these self-sufficient officials inquire of the legislators during the winter months, what need have we for anything better than we now have—are we not at our posts to meet all emergencies? Aye, to recognize poisons by their results; the necessity of keeping sewer gas out of our houses, *after* the family is stricken with diphtheria or typhoid fever; the evil of filling low lots with garbage in the winter time, by the stenches and diseases of summer; the undrained soil and wet cellars of whole wards and neighborhoods, by the annual harvests of death; public school crowding, by the general prevalence of scarlet fever, diphtheria, measles and whooping-cough; neglected vaccination, by epidemics of small-pox; habitual tolerance of filth, by the perennial prevalence of gastric and intestinal diseases; inducements of cholera, when it comes; inflammable structures, when the conflagration breaks out; explosions, by the *débris*. But who so frantic as they when explosions do come: whether of some neglected structure or an appalling epidemic? Who cry more loudly for aid by pecuniary appropriation or otherwise, to stay the progress of small-pox or other disease, which might have been wholly prevented by timely measures? Who strive more urgently to shift the responsibility on others' shoulders? Who rush more frantically to quench the conflagration, or arrest the rush of waters? And who more ostentatiously than they invite the publicity of interviews to their constant contention with results instead of causes?

The administration of public health, to be effective, can no longer be looked upon as a mere complement of political perquisites, to be bestowed upon the favorite doctor of the successful party. Sanitary knowledge has no intuitive road; it can only be obtained by special and diligent study, comprehending a knowledge of physics, the principles of pneumatics, hydrostatics and hydraulics, with special reference to ventilation, water supply, drainage, construction of

dwellings and sanitary engineering, generally; and the differential relations of unhealthy conditions to general and specific diseases, with a knowledge of the best means of preventing them.

We of course, recognize the general truth, that all health organizations must depend upon the body politic for their existence; that without legislative action and authority the necessary functions cannot be exercised—and these are the reasons why the Legislature of New York is now invoked to take such action as will place the keeping of the health of the State at large into carefully chosen, competent hands, under the care of men who will appreciate the importance of the work to be accomplished; who will inquire into the causes affecting the health of the people in all the counties, cities, towns and villages throughout the State; eliciting information on drainage, sewerage, water supply, food, poisons, the unsanitary condition of the public schools, manufactories, places of public assembly, hospitals, asylums, almshouses, prisons and burial grounds; who will establish a system of *Vital Statistics*, by which accurate records may be kept of all births, marriages and deaths—as an efficient arm of government in developing the resources of the State—by thus bringing out the conditions and laws which govern the physical condition of the people; showing by the relative health and mortality of different populations the influences of local conditions, occupations and habits, with deductions therefrom, elucidating the effective physical power of the people under various circumstances; who will inquire into the conditions of the common means of transportation and storage throughout the State, as applied to individuals affected with contagious diseases: the transportation of cattle, and their diseases; infected merchandise and clothing; the danger of contaminating foods by unsanitary conditions of storage, and suggest such regulations as will prevent the spread of disease by such means. These are but the skeleton, a mere hasty tracing, of the lines of labor for a State Board of Health. To elicit and utilize the information which it contemplates, may be made the means of saving thousands of lives and millions of dollars annually.

Life Insurance on Trial.

The Legislatures of half the States in the Union, and a large part of the press, are busy with Life Insurance matters; and an amount of ignorance on the subject finds daily expression such as we have never before met with. Neither editors nor legislators are to be blamed for not understanding a business in which so much is technical and scientific; but it is always amusing, when it is not dangerous and painful, to see men gravely shaping their own opinions, and those of the public, and even framing the laws of the land, for the control of a great interest, when they are not only without any real knowledge of its nature and needs, but when they are filled with notions and prejudices which are unfounded and false. This is particularly the case with most of the gentlemen who have discussed the subject in the Legislature at Albany this winter. The most remarkable speech was that made in Assembly on February 6th, by Mr. A. H. Purdy. It fills nearly three columns of the "Argus," and is a tirade of abuse, directed against Life Insurance Companies, their officers, trustees and agents, without discrimination between good institutions and bad, or, indeed, between fact and falsehood. Vulgar rumors, which

never had any better authority than a malignant imagination, are eagerly caught up by this statesman, and put forth as unquestioned truth. Hardly a slander has ever been uttered against the business in any form which is not reiterated here.

All this violence, exaggeration and abuse can serve no good purpose. Its immediate effect probably is to excite a sympathy with the managers of the business, as indiscriminate as the attack. Certainly no legislation of value was ever conceived or matured by men in the unbridled and obscure state of mind in which this speech was uttered. There have doubtless been many people who regarded all parsons as scoundrels because Dr. Dodd was a forger, or all physicians as dangerous neighbors because Dr. Webster was a murderer; but this, which is Mr. Purdy's favorite style of reasoning, will never lead to wise results in law or statesmanship. Yet, if present indications are correct, nothing much more valuable is likely to be contributed to the question at the present session of the Legislature by direct discussion on the floor. In fact, the points which demand attention are not suited for such discussion. They require the close and careful study of impartial minds, able to understand the scientific foundations and reasonings on which Life Insurance is founded, the commercial conduct of the business, and its relations at once to the insuring public and to the government.

This fact points to the course which true policy dictates. The Legislature ought to establish a commission, formed of some of the ablest men in the State, to draft a code of Life Insurance Law, in place of the cumbrous, complicated and inefficient mass of statutes now in existence. No government on earth has at present a satisfactory law on this subject. That of Great Britain seems to serve its purpose best, and there, there is no supervision whatever. The difficulties in the way of efficient supervision by the State are immense; and until a comprehensive system is devised, in which they shall be overcome, only mischief is likely to result from further interference. A bill providing for such a commission was introduced early in February, but has not made any progress, as far as we can learn.

Such a commission, wisely formed, will consider whether or not State supervision is desirable; whether net valuations by a legal standard should be preserved; whether a fixed rule for determining solvency ought to be established by law; what method can be adopted for preventing fraudulent and false statements, and for punishing all breaches of trust and of law on the part of managers; how the assets of insolvent companies shall be distributed, and many other pressing questions, the want of a definite settlement of which is every year producing great confusion and loss. We earnestly trust that the bill for a commission on the subject will be matured and passed before the Legislature adjourns.

To the Editor of The Sanitarian:—In remitting the enclosed check, to pay my subscription to The Sanitarian for the current year, I cannot withhold the expression of my high appreciation of the value of the journal, and an acknowledgment of the advantage which I have derived from the perusal of its successive numbers.

In your original Prospectus you sketched the outline of a very comprehensive field of labor, and, adverting to the fact that the resources of sanitary science are inexhaustible, you proceeded to say

that "it will be a chief object of THE SANITARIAN to awaken public attention to the extent of the field, and to the facts indicating how beneficently it may be cultivated. This will be done by showing the amount of ill-health and mortality from preventable causes of disease, by pointing out the nature of those causes and the way in which they operate, by showing that such causes are removable, and by exhibiting improved health, longevity and happiness as the fruits of their removal." You further specified in this connection sanitary architecture; light, space, warming and ventilation; climate and domicile; epidemic, endemic and hereditary diseases; occupation, exercise and habits, food and beverages, in all varieties of quality and quantity. How constantly these objects have been kept in view and how well they have been treated, I need only refer to a few papers which at the moment I recall, and which are but a sample of a very numerous class. I cite Dr. Agnew's Inaugural Address on the "Importance of Sanitary Science;" Dr. Stephen Smith on the "Results of Sanitary Improvements of Towns;" Dr. A. L. Carroll's Lecture on "Preventable Diseases;" Pettenkofer's Lecture on the "Value of Health to a City," and Dr. J. R. Black's very suggestive paper, in the January number of this year, on "Public Health Reform."

I might with equal readiness specify a large number of interesting and valuable articles to illustrate the satisfactory manner in which you have fulfilled the promise of the Prospectus in respect of the practical questions of State Medicine, quarantine, civic cleanliness, water supply, drainage and sewerage.

Having recently had occasion to draw up a report for the Medical Society of this State, on "Advances in Hygiene and Public Health," I was gratified to find that it was seldom necessary to cite facts which could not be found on the pages of THE SANITARIAN. For in addition to the original papers which it contains, you have made a very judicious selection of abstracts of reports and other valuable papers read before scientific associations, and have given critical notices of the leading sanitary publications of the day. In short, you have exemplified your promise that "whatever thing, condition or circumstance is in *rapport* with, or antagonistic to, the most perfect culture of mind and body, will be considered legitimate matter for THE SANITARIAN to discuss, advocate, condemn or reject *at the bar of health.*" It ought to be taken by every family in the United States; and no physician who would keep abreast with the advance of sanitary science in the prevention of disease can afford to do without it.

I should be glad if you could arouse the members of local medical societies to a sense of the importance of an exact system of registration of disease within the limits of their respective districts, and, in connection therewith, to make a careful investigation of the causes of all preventable diseases. If this were done in only a few districts at a time, and the results were published in THE SANITARIAN, it would be an example and encouragement to others, and there might thus be gradually accumulated the materials for a sanitary survey of various portions of our country, which would be the beginning of a grand work, to be hereafter perfected under the auspices of a Sanitary Bureau of the National Government.

Very truly yours, J. L. CABELL, M.D.

University of Virginia, Feb. 8th, 1877.

The Public Health.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*

POPULATION AND REGISTRATION, AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,071,786—4 wks. end'g Feb. 24.	726	1752	21.25	61	1	61	89	1	48	31	19	1	28	30	325	309
Philadelphia, 825,500—4 wks. end'g Mch. 3.	361	1131	17.81	31	20	34	17	1	21	4	24		9	11	192	145
Brooklyn, 506,000—4 wks. end'g Feb. 24.	313	785	19.32	15	1	57	61		28	16	8		13	5	145	112
St. Louis, 498,000—3 wks. end'g Feb. 24.	123	331	11.52	14		12	1		3	6	5		3	4	47	87
Chicago, 420,000—4 wks. end'g Mch. 3.	325	603	18.66	25	1	31	109	1	25	1	8		6	8	60	70
Baltimore, 350,000—4 wks. end'g Mch. 3.	280	614	22.71	9		17	65	25	10	12	9		3	5	116	88
Boston, 352,000—4 wks. end'g Feb. 24.	201	527	19.27	17		37	9		10	9	7		1	9	94	71
Cincinnati, 265,000—5 weeks end'g Mch. 3.	265	450	16.76	16	10	9	3		8	5	13			12	96	138
San Francisco, 300,000—month of Jan	230	641	25.64	31	53	129	8		13	2	20		2	6	71	82
New Orleans, 210,000—month of Feb.	141	586	33.48	12	186	2		3	3	1	4		4	10	83	69
Washington, 160,000—month of Jan	32	327	24.52	8		8	18		5	2	1		2	1	46	82
Pittsburgh, 152,000																
Newark, 126,000—month of Feb	126	268	25.52	12		12	18		7		3			4	32	29
Providence, 103,000—month of Feb.	42	117	13.6	8		13			1	2			1	1	15	14
Milwaukee, 100,781—month of Feb	95	176	20.95	3	28	12	24	1	1		1	1	1		14	17
Rochester, 70,000—month of Feb	14	84	14.4	1		4	2						3	2	17	10
Richmond, 72,500—3 wks. end'g Feb. 24.	26	93	22.23	4		2						1		3	17	9
New Haven, 60,000—month of Feb.	37	103	20.6	2		2	8	1	3		2				14	11
Charleston, 57,000—4 wks. end'g Feb. 24.	49	97	22.12													
Toledo, 50,000—2 mo. end'g Feb. 28.	29	90	10.8	12	1	2	1	2	3	2	2				16	10
" " Year 1876		740	14.8	72	5	8	16	21	16		17			66	65	86
Mobile, 40,000—month of Jan.	20	89	26.70	5	4				2					3	11	22
Dayton, 36,000—month of Feb.	13	35	11.66	1		1			4						6	2
Nashville, 27,000—month of Feb.	21	51	22.66	3		8				3	1				8	4
Wheeling, 28,000—2 mo. end'g Feb. 28.	34	89	18.85	6		3	8				2		2	4	15	13
Buffalo, 170,000—month of Feb.	38	125	8 83	4		1			4		1			4	21	21
Knoxville, 13,000—2 mo. end'g Feb. 28.	14	29	12.99	3			1	1	1						3	3
Paterson, 39,000—month of Feb.	25	78	24.			6			2	1	1				15	11
Petersburg, 20,000—4 wks. end'g Feb. 24.	15	38	24.7	5		1									8	6
Lansing, 8,400																
Selma, 8,000—month of Feb.		15	22.50												3	2
Elmira, 20,093—month of Feb.	7	25	14.44	1											4	8
Yonkers, 17,500—month of Feb.	8	25	17.14	3		2							3		5	1
" " 6 mo. end'g Dec. 31.	99	195	22.	14		17	5	11	1	4	3		3	24	27	26
Memphis, 45,000—month of Feb.	26	89	23.73	2			2		1	2	3		2	3	18	24
Erie, 26,037—Year 1876	176	350	13.4	19		12	4		1	17	12			33	46	19
Detroit, 115,000—Year 1876	1067	1837	15.97	69	55	30	18	40	38	21	40	8	9	291	210	187
Syracuse, 60,000—Year 1876	331	816	10.26	45	11	13	31	18	11	16	17		2	78	129	77

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during four weeks ending January 27th, 24,580 births and 14,264 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 10,316. The mortality from all causes was, per 1,000—in London, 21.35; Edinburgh, 22.25; Glasgow, 26; Dublin, '31; Portsmouth, 17.75 Norwich, 17.50; Wolverhampton, 23.75; Sunderland, 25.25; Sheffield, 21; Birmingham, 21; Bristol, 24; Liverpool, 27.50; Salford, 29.25; Oldham, 25.50; Bradford, 21.75; Leeds, 22.25; Hull, 20.75; Newcastle-upon-Tyne, 25; Leices-

ter, 18.25; Manchester, 27.50; Nottingham, 21. Other foreign cities at most recent dates, per 1,000 : Paris, 28; Rome, 28; Vienna, 26; Brussels, 26; Berlin, 27; Hamburg, 27; Calcutta, 38; Bombay, 34; Madras, 64; Amsterdam, 24; Rotterdam, 26; The Hague, 23; Christiana, 24; Breslau, 33; Buda-Pesth, 42; Turin, 22; Alexandria, 44; Copenhagen, 21; Munich, 34; Naples, 32.

Vital Statistics.—According to the conclusions of numerous observers and statisticians under various circumstances, it seems to be an inexorable law of nature, that of any given number of people living under even the most favorable conditions, at least 11 out of every 1,000 must die annually.

That the number of persons who die every year so much exceeds the inevitable ratio of 11 per 1,000, is sufficient evidence that sanitarians everywhere have a vast work before them, as important and as significant in its anticipated benefits as any which concerns the best interests of communities, states and nations.

To enable those who are intrusted with the care of the public health to estimate and measure the results of their work, accurate statistical information relative to the number of deaths and births, and the amount and nature of prevailing diseases for given lengths of time, is, therefore, of the highest degree of importance to all enlightened communities. Unfortunately the registration of diseases has not yet been systematized, or even attempted, in this country, although there can be no question of its utility; and we trust the time is not far distant when the registration of diseases will be everywhere required as a necessary part of sanitary administration.

But we have records of births and deaths in some of our communities approximately accurate—and proportionately valuable.

The mean period of the life of a people is the best possible test of the state of the public health, and to arrive at this with any degree of accuracy without carefully-kept records of births and deaths, is wholly impracticable. In England, where such records have been consecutively kept for many years, the present ratio of mortality for any large population, under the most favorable circumstances yet attained, is from 15 to 17 per 1,000. In other—and including the most unfavorable conditions—the ratio is from 24 to upwards of 30, under exceptionally bad and usually temporary conditions. The present average ratio for the chief cities is about 23 per 1,000, or more than twice as great as it should be, on the basis of *inexorable law*. And it is melancholy to think that, even in England, notwithstanding the superior health service in that country, more than one-half the deaths are of persons under the age of puberty, and nearly five per cent. of all during the first month of existence. Of old age very few die. Of "accidents" many, many more than are recorded as such, if such records were consistent with their pretensions. Dr. Cameron,[1] a distinguished authority on such subjects, observes in this relation: "If a strong and healthy man be poisoned with sewer emanations and die from typhoid fever, surely that circumstance would be an accident! Every death from a preventable disease is an accident, and not a natural and inevitable event. Nor are all the maladies termed "constitutional" necessarily inherent in man's nature—most of them are the results of privation, hardship, intemperance, gluttony and immorality; many of them are produced by breathing bad air and drinking foul water. They not only originate in our faults and misfortunes, but we also inherit them from our ancestors, for the effects of the sins and mishaps of men, afflict their children "even unto the third and fourth generation."

Marriage at the proper time is fav or-

[1] Manual of Hygiene, p. 25.

able to health and long life. By the statistics of M. Bertelon and others, in a discussion of the subject before the French Academy of Medicine in 1871, from 25 to 30 years of age married men die at the rate of 6; the unmarried, 10; and widowers at 22, per 1,000, annually. From 30 to 35 years, the deaths among the same classes respectively are 7, 11 and 19½; from 35 to 40, 7½, 13 and 17½, per 1,000, and the same favorable conditions to the married continue at greater ages. But married *men* aged from 18 to 20 die as fast as men from 65 to 70.

Among women marriage is not quite so favorable as among men. From 30 to 35, wives die at the rate of 9, and spinsters 11, per 1,000. Under 25 the mortality of wives is a little greater than among single women. After 40 years of age, the longevity of married women is much greater than that of the unmarried.

The probabilities of life in this connection are—a man at 25 who marries has an expectation of 40 years' married life; if he does not marry, his expectation at that age is only 35. A woman who marries at 25 may expect to live until she is 65; if she remains single, to 56 years of age. Widowers and widows are nearly as badly off as those who do not marry.

Of *births* there are in England an average of five to each marriage, or 35 per 1,000 of population. The height of the birth-rate is a valuable indication of the prosperity and welfare of a population. A *high birth-rate* in the presence of a *low death-rate* indicates that the community is living under proportionally favorable conditions to health and longevity. But there should always be coincident herewith for its perpetuation and the prosperity of a people, area of habitable space, and country sufficient to support the increase. But space forbids a further introduction to the most proximately accurate records of vital statistics we have in this country.

Massachusetts is the pioneer State, in State Medicine, in the United States, and she presents the best example we have of careful registration. By the report for the year 1875[1], which now lies before us, there were recorded during the year: births, 43,996; marriages, 13,663, and deaths, 34,978. The aggregate of these numbers is 92,637, a total, less by 445 than the total of 1874; and in detail, as compared with 1874, the numbers less, respectively, were—of births, 1,635; marriages, 1,901; deaths, 3,091; still-births, 1,374—95 less than in 1874. The natural increase of population, or excess of births over deaths, was 9,018—4,726 less than the natural increase in 1874. The daily average of natural increase was 24.71. The *ratios* per 1,000 of population were: births, 26.63; marriages, 8.27; deaths, 21.17. Of all who died, the average age was 29.81. The excess of the birth-rate over the death-rate was 5.46 per 1,000. One living child was born to every 37.55 persons; one person married in every 60.45; one died in every 47.23. The year, on the whole, as compared with a series of years preceding, was unfavorable to public health, giving the largest ratio of deaths of any year for the last eleven, excepting in 1872 and 1873.

Of the *causes* of death, 33,961—out of the total of 34,978—were determined, and of these there were of:—zymotic diseases, 9,740; constitutional diseases, 8,160; local diseases, 10,813; developmental, 3,826; violent deaths, 1,422. Of the zymotic diseases, "filth diseases" and contagious affections destroyed the greater part—scarlet fever, diphtheria and croup leading. 1,059 died of typhoid fever. Of the constitutional diseases, 5,738 were of consumption. Of violent deaths, 159 were suicides, an unprecedented number, 44 more than in 1874.

The Report throughout is an admirable example of condensed scientific labor.

Rhode Island has for twenty-three

[1] Thirty-fourth Report to the Legislature of Massachusetts relating to the Registry and Return of Births, Marriages and Deaths in the Commonwealth, for the year ending Dec. 31, 1875. Prepared under direction of the Secretary of the Commonwealth. With Editorial remarks by F. W. Draper, M.D., Lecturer on Hygiene in Harvard University. Public Document, pp. clxii.

years followed the example of Massachusetts. The Report for the year 1875[1] shows the same care and completeness which have characterized it in previous years:—Births, 6,508—to population, 1 in 39.7; still-births, 246; marriages, 2,485,—to population, 1 in 52; deaths, 4,317—to population, 1 in 59.8. Deaths per 1,000, 16.7. The births and deaths were slightly more numerous, and the marriages less, in proportion to population, than in 1874. Of the causes of death, 24.50 per cent. were of zymotic diseases, the most prevalent of these being: diarrhœal, scarlatina, typhoid fever and croup.

In these records for the year, there was one mother in Rhode Island who had borne eighteen children. During the nineteen preceding years, ending in 1875, there were four women who had each borne nineteen children; two had borne twenty each; two twenty-one each; and two twenty-two each. In the census of Massachusetts for 1875, three mothers are reported as having borne each twenty-three children, two twenty-four, and four *twenty-five births* each, and the statements were accepted as being "well authenticated."

U. S. Army.—Annual Report for 1876 contains the usual records of mean strength, sick and wounded:

Among the *white* troops 21,681, the total number of cases of all kinds taken on the sick-list was 37,561, being at the rate of 1,732 per 1,000 of mean strength; or about seven entries on the sick-list during the year for every four men. The total number of deaths from all causes during the year was 518, or 24 per 1,000 of mean strength; of these 180, or 8 per 1,000, died of disease, and the remainder, 16 per 1,000, of accidents, wounds and injuries.

Among the *colored* troops, 2,002, the total number of cases of all kinds taken on the sick-list was 3,462, being at the rate of 1,729 per 1,000 of mean strength. The total number of deaths from all causes during the year was 26, or 13 per 1,000 of mean strength; of these 16, or 8 per 1,000, of mean strength died of disease, and the remainder, 5 per 1,000, of wounds, accidents and injuries.

To the National Library were added, during the year, 2,000 volumes. And the photographers have added to their collection, 810.

The Surgeon-General strongly recommends Congress to authorize the printing of the subject catalogue.

Louisville, Ky., has *three medical colleges* and *three medical journals*, all flourishing, and *no* Health Department.

Jewell's Cereal Food has been pronounced by the judges of the Centennial Commission award, to be "well prepared, and approaches as nearly as possible to supply the place of human milk."

A chief virtue of **Woodward's Soil Pipe Valve** is that when properly fitted, the greater the backward pressure of sewer gas, so much the more perfectly and completely is it resisted.

Adee's Trap for wash-stands and sinks is one of the most perfect and efficient means against the escape of sewer gas into bed-rooms hitherto invented.

Milk of Magnesia. Stamford, Feb. 13th, 1877.

Editor of THE SANITARIAN: Will you please tell me in what the superiority of "milk of magnesia," as compared with other preparations of the same drug, consists?

Is it uniformly reliable?

Is it, in your judgment, better than rochelle salt as an anti-rheumatic?

W. H. TROWBRIDGE, M.D.

The superiority of the "*milk*" of magnesia consists in its admirable eligibility for administration; in this it is superior to any other form of magnesia that has fallen under our notice, and for this quality solely we prefer it to all other preparations of that medicine. In regard to its reliability, we have never failed to get the usual effects of magnesia in its use; but as a remedy in the prevention or treatment of rheumatism or any other disease, in comparison with other remedies, we are not aware of its possessing any specific virtues,

[1] Twenty-third Report upon the Registration of Births, Marriages and Deaths in the State of Rhode Island, for the year ending Dec. 31, 1875. Prepared under the direction of Joshua M. Adderman, Secretary of State, by Edward T. Caswell, M.D. Public Document, pp. 116.

other than being one of the best medicines of its class.

Literature.

Prevention of Cruelty to Animals[1] is an object eminently worthy of the sympathy and active support of every true philanthropist. The honored President of the American Society, Mr. HENRY BERGH, congratulates the Society on its numerous victories and glorious achievements since its organization; and on the exhibition made at the Centennial of the wonderful development of the humanities of life, as applicable to that vast portion of animated creation, which, while they can suffer and die, cannot orally make known to us their countless wrongs.

The general work of the year has comprised 1,005 cases of prosecution for cruelty; prevented the perpetration of cruelty and abuse of animals on the streets upon 2,010 cases, in the cities of New York and Brooklyn alone. Number of punishments and fines procured against the offenders in the courts for the year, 107.

The Society has greatly extended its operations throughout the State of New York during the year, having now fourteen branches in active working order, and 150 agents, outside the city of New York.

In the United States, Canada and Nova Scotia there are now forty societies, many of them having branches, all organized on the plan of the parent Society in New York.

While Mr. Bergh sees much to congratulate the Society upon, in the progress it has made in the cause of humanity, he nevertheless portrays an immense field of labor still open, wherein every member of the Society may find an abundance of room to work. The cruelties practiced in the transportation of cattle, the bad treatment of canal horses, continued slaughter-house cruelties, and "the most diversified and cruel barbarities of veterinary surgery, as at present practiced, continue to disgrace our humanity."

Vivisection, we regret to find, he enumerates in the same category. "Vivisection, or, more properly speaking, scientific torment, . . . as practiced by men in our own land; who, possessing more brains, perhaps, than heart, still adhere to these barbarities, though (he believes) under modified forms, since the establishment of this Society." Doubtless the Society has done some good in this particular, and for the good it has done in this, as in other particulars, it deserves credit. But with some opportunities for knowing and believing that we have no experimental physiologists in this country now who are in the habit of inflicting unnecessary cruelties on animals—*in the prosecution of their studies for the promotion of the highest degree of human culture for the good of mankind*—we are constrained to believe that Mr. Bergh, in his sympathy with the animals which he would so enthusiastically protect under all circumstances, does physiologists great injustice. Very rarely indeed are any physiological experiments on animals made nowadays, without first placing them under the influence of anæsthetics, which deprive them of all pain. And, we may be permitted to state, with the kindliest feelings for Mr. Bergh and his work, a little more cultivation of his own brain in physiological knowledge, would enable him to appreciate the *absolute necessity* of experiments on living animals for its prosecution. Such cultivation would not in any respect be likely to harden his heart, but would certainly soften it against persons who are engaged in labors no less noble than his own for the best interests of humanity. Before the discovery of anæsthetics, physiologists were unquestionably under the necessity of inflicting pain on animals in the prosecution of their studies, as were surgeons also in he exercise of their skill on patients; both laboring, however, for the alleviation of human suffering, in a field of labor no less fruitful in good works than that which Mr. Bergh cultivates,

[1] Eleventh Annual Report of American Society for the Prevention of Cruelty to Animals. New York: Headquarters of the Society, Fourth Avenue and Twenty-second Street. 1877.

and characterized by achievements at least equally noble.

"The Bill forbidding the Salting of the Streets" for the removal of snow is another very questionable subject of congratulation on the part of Mr. Bergh. For, admitting that snow sprinkled with salt, or the slush caused by this means, is four or five degrees colder for the time than snow, or snow slush, not so treated (and it is no more than this), it should be borne in mind that without the salting, snow *will last about five times as long*.

Which, therefore, produces the greater degree of discomfort, or is the more likely to injure the health of man or beast—to endure the salted snow slush of twenty-eight degrees' temperature for *one* day, or snow slush not salted for *five* days?

The collateral questions, such as coldness, dampness or dryness of the air, drainage, cleanliness, etc., are all in favor of the salt, and *health*.

And *this* knowledge, too, could all be acquired by Mr. Bergh, without any danger whatever of hardening his heart or unduly expanding his brain.

From the very bottom of our heart, we wish his work success, and these exceptions we take to his manner of prosecuting it—and obstacles which he, in his mistaken zeal, places in the way of it—are taken with the sincere hope of promoting the best interests of the Society over which he presides with much-deserved honor.

Nutrition—that function in the animal economy by which the food, elaborated by the various organic actions, loses its own nature and assumes that of the different living tissues—is, of all the phenomena which constitute living action, the most essential to the maintenance of health. Indeed, nutrition comprehends all the vital functions through the agency of which the animal body is developed from the simple cell, maturity accomplished, and life maintained. And it is well, "in the making of many books" on *foods*, in all their varieties, that readers should have their attention arrested for a time by a scientific discussion of nutrition. Hence we welcome the work now before us,[1] as being especially timely and important. Few authors have had better opportunities or more industriously improved them, than **Dr. James Henry Bennet.** By more than thirty years' study and practice of the principles which he inculcates, and the author of various successful books on other subjects, the present work will not fail to attract merited attention from all who value well cultivated observation more than mere theoretical speculation. Whatever it may appear to lack in not recognizing the experiments and opinions of some recent writers on unsettled physiological questions, it more than makes up by careful observation on accepted truths.

The work begins with the Chemical Elements of the body, and the sources from which they are obtained, by means of the functions of nutrition.—Digestion, and the functions of the organs concerned in it; Respiration, and the changes effected in the blood by it; Variable Nutritive Requirements, and the effects of temperature; Defective Nutrition from a variety of causes; Urinary Deposits in Defective Nutrition, and their significance; Practical Deductions: food requirements in health; individual peculiarities and requirements in ill-health, Confirmed Dyspepsia and Vital Force; Mineral Aliments in the Nutrition of Plants, and the influence of Heat in accelerating Vegetation; Why do Successful Medical Men often Die Prematurely? All discussed with an ability which shows the fruit of thorough familiarity with the subjects at issue, and with a clearness and force which commend the work to all who would understand the usual circumstances and habits of life in relation to nutrition in its most comprehensive sense, and with the best practical utility.

---

[1] Nutrition in Health and Disease.—A Contribution to Hygiene and Clinical Medicine, by James Bennet, M.D., Member of the Royal College of Physicians, London, etc., etc., etc. Second edition, 8vo, pp. 248. Philadelphia: Lindsay and Blakiston.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. MAY, 1877. NO. 50.

THE INFLUENCE OF CIVILIZATION ON THE DURATION OF LIFE.*

BY CHARLTON T. LEWIS.

That the State is the final cause of the individual, was the political theory and the moral law of the highest ancient civilization. The citizen's rights and duties were measured and limited by the interests of his city; his glory lay in what, by living or dying, he could add to its glory. That the individual is the final cause of society was the early Christian theory, which disintegrated the Roman Empire, which set up above the work of love and of statesmanship the saving of each man's soul, and which, slowly purified from kingcraft and priestcraft, survives in the democratic politics, and in most of the economical and social science of our own day. The conflict of these two theories, in its many phases, has been the best part of history; for it has been the conflict of ideas, and of minds loving the truth, while the rest has been the struggle of grasping selfishness, or of passion. Yet this conflict has been but the prophetic shadow of one more momentous, which begins in our own day, and in which is destined to move and work, for hope or for despair, the intellectual life of generations to come. The relation of individual man to organized society is but one of the outward forms assumed by his profounder relation to the human race; and it is with this relation, as determining the meaning of his nature—physical, mental and moral—that modern thought must deal. Is the end of our being to be sought in the individual or in the race? This may be presented as the final problem, alike of science, of philosophy, and of religion.

Immanuel Kant had, perhaps, the sharpest mind's eye that ever tried to scrutinize mind. But long before he began his immortal researches into the basis of certainty, his studies had taken a still wider range. In early life he wrote some fugitive papers for an obscure journal, which I have not now within reach, and of which I can speak but vaguely from recollections of a perusal many years ago. But one thing is certain, that in them he foreshadowed the great prob-

* Read before American Public Health Association, Boston, October, 1876.

lem which was to occupy coming ages: he saw and declared that the persistent race and the transient individual are the poles of thought, and that around these the mind of the world must yet move. Doubtless Emerson had read these papers, when, in one of his early essays, he pointed out the mystery of nature, "the race never dying, the individual never spared." And Tennyson had certainly read them, when he translated their thought with startling fidelity, in one of the most suggestive passages of the "In Memoriam":

"The wish that, of the living whole,
No life may fail beyond the grave,
Derives it not from what we have
The likest God within the soul?

"Are God and nature then at strife,
That nature sends such evil dreams?
So careful of the type she seems,
So careless of the single life;

"That I, considering everywhere
Her secret meaning in her deeds,
And finding that of fifty seeds
She often brings but one to bear,

"I falter where I firmly trod."

These were but the prophetic utterances of seers, dimly apprehending from afar the revolutionary thought of the next age. I must not weary you at the threshold of my subject, or it would be in place to point out how the history of ideas for a century past has revolved around the same centre, approaching it more and more closely. Kant himself, in after life, became the source of a magnificent series of movements, including many of the noblest efforts ever made to reach absolute truth, and culminating in the Hegelian philosophy; the practical meaning of the whole of which was resistance to the inevitable tendencies of the time; efforts to centre the universe in the individual man, though only by raising him to a higher level and presenting him as pure intellect. It was impossible, and the philosophy of the great German school is as far behind us now as that of Aristotle or Spinoza. On the other hand, the greatest of French thinkers, Comte, catching the spirit of the age, attempted to build up his universe of thought on the new conception—the absolute subordination of the individual to the race; and failed to become the acknowledged teacher of our times only, perhaps, because he built by old methods and with old materials on the new basis; because the times were not yet ripe, and the key to the relations of the race with its members was not in his hand. Had he but grasped the two master-thoughts of our own day—the conservation of force in physics, and the origin of species by natural processes in biology—he would doubtless have developed the continuity of nature in a system almost fitted to fulfill his dream of organizing and lastingly enslaving the human mind.

I have called your attention to this problem not because I propose to discuss it, or even to state it fully, but because my special subject this evening leads up to it, and derives interest and value from it. To what extent man is merely a species, a product and a part of the system of nature, and to what extent, if any, he is an exception to it,

or above it, are questions which are closely linked with all intelligent study of ourselves and our surroundings; and it is in the light of these questions that I have sought to explore one little subordinate corner of the boundless field—the changes, if any, which civilization brings about in the average duration of human life, and the causes which produce them. The subject is fascinating, because it has never, as far as I can learn, been thoroughly examined; because it furnishes the most simple and definite measure which can be applied to so vague a conception as progress; and because it seems, at first sight, as if there must be a vast amount of trustworthy evidence accessible upon the average age attained by mankind in all periods of history. After spending a very considerable amount of time, however, in the effort to find and collect this evidence, I am compelled to acknowledge that the results are vague and meagre, and that some centuries of statistical records, such as have never been kept in any country until within the last two generations, will be necessary, before the effects of culture upon longevity can receive an accurate and scientific statement.

It is beyond question that civilized man lives longer than the savage. Our days, on the average, are many more than those of our ancestors of the stone age or the lake period. Some degree of civilization is therefore favorable to longevity. But when we ask whether the extension of life continues as enlightenment grows, the question becomes complicated. A generation ago it was asserted with confidence that the specific duration of human life has for some ages been increasing perceptibly, and so rapidly that tables of mortality made from the experience of one generation are inapplicable to the next. This doctrine will be found throughout much of the most worthless literature in the world, the books on longevity, stated as if it were an obvious law of nature; but the only pretense of proof is that the famous Northampton table of mortality, and others constructed by similar methods, have been found to show a much shorter expectation of life than the experience of our own day. The science of statistics, however, has long left such notions behind, and has shown that the inaccuracy lies in the methods of constructing earlier tables. They do not properly represent the law of mortality at the period and in the community for which they were made; and it is only in very recent times that statistics have been collected with care enough, and on a basis wide enough, to establish that law. Nor are they now so collected, except in a few European cities, as to be of value for this purpose. The American people ought to understand that the cumbrous mortality statistics published by the United States Census Bureau are a laughing-stock for scientific investigators; and that even the great improvements introduced by its recent administration, have but served to expose the imperfection of the system. The mortality tables it has constructed are not so much inductions as conjecture; and the only trustworthy evidence in existence, showing the actual influence of our own climate, institutions and society in modifying human vitality, is that which has been gathered by business corporations, the Life Insurance Companies.

The sanguine doctrine of the rapid increase of life being exploded,

to agree that no improvement has taken place; that the inadequate information we have points the other way; and that the luxury, ease, freedom from exertion, vices, and, above all, the hereditary accumulation of physical ills in civilized man, are probably shortening the tenure of life, perhaps even threatening the ultimate extinction of the more cultivated races. Many of you remember an unsavory discussion which agitated the intellect of Boston two or three years ago, echoes of which are still sometimes heard from the lecture-desk or the press, on the rapid tendency of Massachusetts to relapse into barbarism, from the decline in numbers of the native-born and intelligent people before the multiplying vitality of the ignorant classes. This kind of reasoning sometimes leads to amusing results. Thus Mr. Ray Lankester* has published a work on "Comparative Longevity," in which he makes this startling remark: "Were the evolution not always in advance of the provoking cause, we might anticipate the extinction of humanity, by the excessive competition and the excessive difficulties of existence which must always accompany increased population." Dr. Hough, of Philadelphia, in one of the most elaborate discussions yet presented to this Association, insists that there is a progressive decline in the vitality and longevity of the American people. "If," he says, "all the inhabitants of the globe were living in cities of the magnitude of London, and subjected to the same influences connected with the movement of population, the whole human race would become extinct in a century or two." It is hard to believe that the human race will ever die out, as long as the earth is crowded with men; or even as long as cities of the size of London remain. Nor, because enthusiasts have believed in an exaggerated and absurd extension of human life, and have supported the belief by mistaken facts, need we infer that the life of man is really growing shorter.

Not troubling you with the detailed facts, which seem to me to prove the contrary, I shall simply cite the highest authorities on the subject. Professor Owen, the great anatomist, has examined the subject as respects Great Britain, and is satisfied that the average life there is higher now than in the last century. Sir Thomas Duffers Hardy has searched the records of the English courts for four hundred years, from the thirteenth century to the sixteenth; and among their innumerable notices of age, finds no instance of a man who had survived his eightieth year, and proofs enough that the age of seventy was rarely reached, and was regarded as extreme. Mr. Finlaison, the statistician, has studied the results of the Tontine Associations in England, from the seventeenth century down, and has shown that the expectation of life among the classes who invest in such funds has gradually increased full twenty-five per cent. during that period. Kolb, the careful and sagacious German writer on comparative statistics, sums up the case thus: "The meagre facts known indicate that the maximum age of man has remained nearly the same for centuries and even thousands of years; but that the number of persons who reach extreme age, and especially the number who survive in-

* The inquirer who recently brought to grief, in London, our pet New York humbug, Dr. Slade.

fancy, has very materially increased." I have examined, I think, substantially all the evidence in existence upon the subject, and find these moderate judgments to be sustained by it.

Now this improvement is just what we should expect. It depends on no mysterious law of development, no innate tendency to an increase of vitality. It is the necessary result of agencies so obvious and so powerful in our civilization, that we need statistics not so much to prove their existence as to measure their effects. Let me enumerate them:

1st. The first is the improved care taken of infants. In savage life the babe is scarcely protected except by the mother's instinct. If this is interrupted by accident or disease, it perishes at once. It is liable at all times to fatal exposure. Step by step improvement is made as men become civilized. In Soranus, a famous medical writer of the second century, we find an elaborate discussion of the care of infants. The Thracians and Macedonians, he says, always bound the new-born child firmly, hand and foot, to a hard flat board. The Thessalians hollowed out the board to the shape of the body, and put in a stuffing of hay. These nations, like some North American Indians of our time, thought it necessary to hold the child motionless during its early life. Soranus himself advises that it be wrapped closely and firmly in woolen bandages, and that careful manipulations be practiced, to give shape to its head and spine. The Germans and Scythians, he tells us, and many of the Greeks, used to dip the new-born in cold water, to test its vital strength, and try whether it was fit to be reared. Soranus, who represents the highest skill of his period, warns parents against giving the babe its natural food, the mother's first milk. This must be thrown away, and goat's milk and honey substituted. Thus we might trace step by step the slow progress of medical science, and the slower progress of custom, towards the very moderate degree of excellence in both which now prevails, and remember that every step in each of them represents a gain of countless lives.

Let one proved fact illustrate the gain already secured. In London, 175 years ago, when the population was less than 675,000, the annual deaths of children under five years were 9,500. In 1810, when the population had increased to 1,050,000, this class of deaths had been reduced to 5,500 yearly—a saving of 62 per cent. on the average. Similar facts might be multiplied from statistical records, wherever health has been intelligently studied and sought. Of all the achievements of sanitary science, the greatest has been the rescue of these innocents from wholesale slaughter; yet this is still the most awful and the most hopeful field for its work. In every land human motherhood is still a Rachel weeping for her children; the children are dying from causes which might be prevented. There is room here for boundless preaching, but where lies the responsibility? In Shakspeare's words:

> "*Who lets* so fair a house fall to decay,
> Which husbandry in honor might uphold
> Against the stormy gusts of winter's day,
> And barren rage of death's eternal cold?"

We find, then, that an infant's chance of surviving to maturity is steadily increased as civilization advances.

2d. Substantial improvement has been made from age to age in the care of the sick, infirm and aged. Among savages, every serious illness ends in death. The mutual help and care by which lives which cannot support themselves are supported by others is the product of society, and grows effective as social ties are strengthened. Even in this century, and among people which have something like a social organization, the custom of putting to death those who survive their strength has been found in full force. Every stage of progress, from this barbarism to the humanitarianism of our hospital and almshouse system, may be traced, and the obvious result is a gradual lengthening of the average life.

3d. Another important agency is the avoidance of epidemics. It is hard for us to understand the horrors of these visitations in former ages. There are no more thrilling pages in literature than those which depict them. The plague of Athens, as described by Thucydides and Lucretius; those of Italy, truthfully reported in the romances of Boccacio and Manzoni; Defoe's story of the plague in London; the accounts given by German and French chroniclers of the Black Death of the fourteenth century—all these are fresh, with their fullness of immortal agony, in every reader's mind. And thousands of such pests have swept across nations, and left no such records. In our times, vast tracts of Africa have been depopulated by fever; whole tribes of Indians have been destroyed by small-pox. We are exempt from such disasters. It seems that civilization has outgrown the danger of them. The test has been applied. The cholera was made dreadful to the thought by its ravages in the East, and by association with the plagues of history, when it began its march across the civilized world. But it touched enlightened nations too lightly to revive such memories. Of the 40,000,000 of people whom it slew in the half century after the wars of Napoleon, but the smallest fraction fell in Christendom. A century ago the small-pox was the scourge of mankind. Its deaths numbered 400,000 a year in England. La Condamine, the first authority in his day, who died in 1774, asserts that it carried off one-tenth of mankind, and disfigured as many more. It is practically abolished by a single discovery, which has added two years to the average life of man in Central Europe. The victories of civilization over some other diseases have been scarcely less signal. For example, scurvy in our navy has been exterminated. Death from it is now literally unknown. I have not been able to find the statistics of its earlier ravages there; but in the British navy, for two hundred years back, the mortality by scurvy exceeded that by battle, wreck and all the calamities of sea-life together. Sanitary science has done away with it. In the thirteenth century leprosy was at least as common as measles now are. Matthew Paris perhaps exaggerates the number of lepers, when he tells us of 2,000,000 in France, and of 19,000,000 in Europe; but the disease was a general plague, and has disappeared before civilization. In the same way typhus, dysentery, yellow fever, scarlet fever, in different degrees, are beginning to yield up their fatal energies, and we are learning to hope and strive for their extermination.

Other great calamities have been overcome or reduced in their proportions by the progress of society. Thus famines figure in the history of all uncivilized countries as causes of immense mortality. A large proportion of the whole people of Germany starved to death during the latter part of the thirty years' war. Mr. Froude finds that at least 200,000 lives were directly destroyed by the Irish famine of 1846. These are the frightful exceptions of an imperfect civilization; but in Germany, Ireland or this country, now, one death by famine is enough to agitate the community and is nearly impossible; while in some barbarous countries, more lives are ended by want of food than by disease or accident. Civilization, by its arrangements for storing and distributing food, and by the greater certainty it gives to agriculture, prevents alike general famine and individual starvation, and thus lengthens the average life.

4th. Finally, I must dismiss with a mere reference a large class of causes which are working in the same direction; our advancing knowledge of the laws of health, and numberless applications of them, public and private; in police regulations, building laws, quarantines and public works; in the construction of dwellings, the heating and ventilation of rooms, the preparation of food and clothing, the hours of labor and rest. In all these there has been a slow practical improvement for ages; and there now begins to be a scientific improvement which promises to be much more rapid.

In order that these remarks may not fill a volume, I must omit to discuss here the application of the doctrine of heredity to these forces, by which the impression they make upon the physical frame of man, in any generation, increasing its vigor, vitality and possible duration, is transmitted to posterity, and thus accumulated from age to age. It is this law which co-ordinates all the influences we have enumerated, and combines them into one movement, continuous and progressive. We may fairly affirm, then, that the average duration of human life is the most definite measure we can apply to the advance of civilization. The lowest races of mankind, in Sumatra, Borneo, Australia, New Zealand, Central Africa, Patagonia, are alike in this, that their life is short. Female beauty is in its prime at 15; it decays after 22. Man is old at 40; he rarely reaches 50, or only in extreme decrepitude. If we turn from this state of life, in which our ancestors doubtless once stood, to the nations of Christendom, and classify them in the order of the average duration of life, we shall have arranged them also in the order of wealth, good government and intelligence. Average longevity is at once the most potent agency in producing these elements of prosperity, and the result which the forces of civilization unite to effect, and on which their energies are concentrated. In an economical point of view, this relation is obvious; for the lengthening of life implies, above all, the lengthening of the productive period—the increased proportion of producers to drones, and a diminished waste in unproductive lives. Herbert Spencer, after a careful survey of the biological aspects of human development, in one of the most suggestive books of our age, finds the fundamental fact in the restless antagonism between the development of the individual and the perpetuation of the race; and that this conflict "ensures the final attainment of the highest form of this maintenance—a form in which

the amount of life shall be the greatest possible, and deaths the fewest possible." In other words, the lengthening of the average individual life measures human progress.

Now an eminent school of scientific men are teaching the doctrine of natural selection, or the survival of the fittest, as the key to all progress in nature. I wish distinctly to bring out the startling contrast between this law and the laws of progress in vitality which we have found actually at work in human history. The first condition of natural selection is wholesale slaughter. It begins by assuming the principle of Malthus, that life tends to multiply beyond the possibility of preservation; of the infinite mass that come into being, nearly all must perish unfulfilled. Who shall the survivors be? Those, of course, who, by superior vigor or by greater harmony with their environment, are most fit to survive. These alone live to reproduce their kind, and transmit the superiority which has preserved them; and thus, in successive generations, the race accumulates the qualities which promote life. Thus the natural process of advancement is founded on limitless waste; the growth of life is in the soil of boundless death; the better form springs ever from a world of graves. Mr. Huxley tells us that the law of evolution, founded on this conception of natural selection, as explaining the mode in which the organic world around us has arisen, stands on a basis of evidence comparable to that which supports the Newtonian theory of the solar system. Let us admit it, then, to the full extent claimed. Admit that man himself, in the structural differences between him and lower forms, is the product of this law, and that, up to the time when he became distinctly human, as contrasted with his quadrumanous kindred, his development was governed by it. We shall see that his human progress is of an entirely different character. Observe that the forces which we find at work in the physical and mental growth of man are not merely independent of natural selection; they are exclusive of it, and at war with it.

Look at each of the agencies we have enumerated. Of a generation of infants entering the world, natural selection says, let them meet hardship, severity, disease, which will destroy all but the most vigorous, and leave those to become the parents of a hardier race. To the infirm of all ages, the diseased, the old, it says, Perish out of my way. You are worthless of yourselves; and, if allowed to multiply, you but perpetuate helplessness and increase misery. Of epidemics it says: Let them rage; they may sweep away strong and weak together, but not without discrimination. They destroy a larger share of the feeble, and leave the average strength of the race and its posterity greater than before. By the standard of natural selection, it would be clear gain that the human race should be exterminated to-day, saving only a handful of the most perfect humanity, to repeople the world after a higher standard.

But the foundation of society introduces the opposite principle. Family affections and social ties have their meaning in the value of the individual life to others; its value to society at large is the central thought of civilization. The preservation of each by the common work and mutual aid of all is the aim of government and law; the basis of families, communities and nations. Thus the formation of society is the re-

versal of the blind law of unconscious advancement, and its every step forward weakens the force on which this natural development depends. Its history is a struggle against the conditions of natural selection, and a steady reduction of its area of influence. Society preserves for the progenitors of the future alike the weak and the strong, the diseased and the healthy. If, then, this blind law is the one key to progress, man must degenerate. Pessimists, then, are right in holding that all our charities, public institutions, sanitary improvements, the very order of society itself, are but means of protecting the weak against the sentence of nature, and of perpetuating their weakness. Benevolence is then but folly, mercy a crime, the charities of civilized life a pernicious force, working for the degeneracy of the race.

There is but one reply: Civilization does largely sacrifice one principle of progress, the law of evolution by survivorship; but it introduces another more potent principle. Under natural selection, improvement must needs be fitful, occasional and immeasurably slow; because the variations upon which it works, and among which it chooses, are but casual deviations from an average standard, which it can at most catch and preserve. But civilization possesses the element of individual culture, by which the standard itself is raised from generation to generation. Society educates the child into a higher type of power, endurance and refinement than that in which he was born; its effects are stored up in muscle, nerve and brain, and through him transmitted to posterity, and thus accumulate from age to age. Under natural selection, when variations in capacity arise, thousands of them are wasted where one is secured, fixed and transmitted. But human society economizes much of this waste, fastens upon and improves an immensely larger proportion of the capacities lavishly produced by nature, and thus concentrates in the brief historical movement forces which would otherwise spread their operation over countless ages. Thus it is the characteristic of civilization that the hereditary accumulation of intellectual and moral culture gradually supersedes the unconscious and physical law of selection as the agency of progress.

Now history, while it has been a struggle between these two principles of advancement, has also been a test of their comparative power. Natural selection, as its ablest expounders have shown, works with such extreme slowness, under the most favorable circumstances, that the progress of its work has never yet been detected by observation. No instance is known of its having effected any marked and important change in any race of creatures, during the period of history. Vast as is its cumulative force, it is exerted only in the course of ages defying our imagination to span; and to accomplish a small part of its work, it must cleave its path of misery and slaughter through epochs measured only by the formations of geology and the cycles of the stars. But the intellectual and moral forces of culture, which have superseded it in man, have actually, within the brief space of a few thousand years, achieved the world of happiness in which we live. The rocks register the story of a blind evolution, which they tell us is still going on as rapidly as ever, yet so slowly that the eye which watches for a few centuries or millenniums can dis-

cern no movement; they cannot explain those laws, by which, within generations too few to make one of their minor epochs, the beastly companions of the cave-bear and the mammoth, the wandering barbarians of the flint period, have produced the intellects of Shakspeare and Newton, the scientific culture and the free society into which their descendants are now born.

We have seen that where animal evolution ends and human progress begins, the laws of individual and hereditary culture supersede the law of natural selection. An interesting consequence of this is the fact that it makes a place for the prolongation of the individual life beyond the period of vital and muscular activity. Under the reign of natural selection, there is no position in the universe for the being who has passed the reproductive stage of energy. Hence wild animals, soon after this period, usually die; and similarly savage society has no home for old age. But civilization centres wholly in the intellect, whose forces are communicated by other than vital processes—in ideas which move and mould the world through the minds and the posterity of others; and the intellect, under favorable circumstances, not only continues its work, but grows in efficiency and usefulness long after time has impaired the physical powers. It is in civilized society alone that the activity of the brain makes old age valuable; and as civilization advances, the economy of preserving a strong and cultivated mind through the longest possible period of activity becomes more and more practicable, and yields a richer reward. Thus it is a strictly scientific truth, that the best symbol of progress, the pride of social achievement, the noblest ornament of our race, is the venerable man, who, in a decaying body, preserves the energies of a wise, benevolent and vigorous mind.

If so much has been done by the semi-conscious work of society, in using and developing the natural forces of man, how much might be done by a perfect organization of society for that work! This brings us to that stupendous conception to which, more in jest hitherto than in earnest, the term stirpiculture has been applied. But we can imagine a future sect of positive philosophers, who shall reason as follows: Man has been produced through vast epochs by natural selection; he has been immensely improved in one era by the half-conscious, imperfect form of selection which has superseded it; and it is certain, therefore, that nature has placed in him, in the processes of growth, waste and decay, an infinite elasticity. Were society organized to improve this elasticity to the utmost, he might rapidly scale heights of being which are unimagined now. Take up the average duration of life, for instance, and make its increase the intelligent aim of society. Subordinate to this aim all the relations and affections of men; let marriages be planned, posterity sifted, medical and social science directed, for the one end of lengthening life; and in generations as few as are required by the horticulturist to produce the gorgeous multiple flower from the timid wood blossom, or by the breeder to bring the wind-fleet racer from the ordinary horse, we might become a people of patriarchal longevity. Nay, let society choose its own ends, set before itself the highest conception of a model humanity, and sacrifice all individual and personal aims to its attainment, by a vigorous selection and preservation of every ten-

dency towards it, and then will begin the evolution of the golden age. We can imagine, I say, such a sect of philosophers; and violently as such a society shocks our habits of thought, there is a tendency in contemporary mind to precisely this system. This is, indeed, the logical extreme towards which our science is pointing; never to be realized in all its naked absurdity, of the absolute loss of the individual in the idea of the race; but destined, as a tendency, followed with greater or less intelligence of its real character, to jar harshly and shock fiercely in the future against the cherished rights, affections and aspirations of the mind, which cannot despise its own personal consciousness, nor unlearn its own hope of immortality.

Thus our special subject leaves us at the threshold of a world of restless thought. And at the close of our study, as at its beginning, the Sphynx of life still stands before us, with her problem unsolved: Is it in the destiny of the race, or in that of the individual man, that we are to seek the end of our being? But if we have not found the answer, we have found reason to be content without it. The two conceptions of life seem to us wide apart, when we contrast work with culture—the creed of the Presbyterian with the creed of the Transcendentalist, the life of John Howard with the life of Goethe. But in the principles which underlie the progress of mankind, we see a tendency to reconcile the two. The capacity for individual culture is a growth from the soil of an advancing race, and the further that culture is carried, the more richness it returns to the soil. So we may be sure that the time and effort wrested from personal growth for the service of society in its thousand forms is not waste for the individual; that the time and effort withheld from social work for personal culture is not lost to mankind; and that every step towards the more perfect organization of society leads to a wiser and more fruitful distribution of its forces between the two ends, making them one. The problem will remain unsolved; the conflict will continue; the man will often groan in discontent that "large results of force" which might have been self-enfolded must be scattered and spent, though in the service of mankind; crying,

> "I doubt not through the ages one increasing purpose runs,
> And the thoughts of men are widened with the process of the suns.
> What is that to him that reaps not harvest of his youthful joys,
> Though the deep heart of existence beat forever like a boy's?"

But he will more and more rise above himself, merge his own aspirations in those of humanity, and triumphantly add:

> "Not in vain the distance beacons. Forward, forward let us range,
> Let the great world spin forever down the ringing grooves of change.
> Through the shadow of the globe we sweep into the younger day;
> Better fifty years of Europe than a cycle of Cathay."

SCHOOL HYGIENE.

The Influence of Vitiated Air and the Direction of Light upon the Eyes.

Proceedings of the New York Medico-Legal Society, February 7th, 1877.
Hon. Geo. H. Yeaman, Vice-President, in the Chair.

Presentation of Paper by Dr. Edward G. Loring, of Boston. Reported by Dr. G. W. Wells, Secretary of the Society.

The Chairman stated the circumstances under which the following paper comes before the Society to be, that in the prolonged discussion on School Hygiene which has taken place here, some gentlemen on the legal side of the House addressed to the medical side certain questions in regard to the influence of vitiated air on the eyes. After the meeting had adjourned, Dr. O'Sullivan, one of the members of the Committee having the matter in charge, requested those legal gentlemen to formulate their questions in writing, which was done. Dr. O'Sullivan sent the questions to Dr. Loring, with a request to reply to them, and that gentleman now returns them with the written answers incorporated in the paper, which I will now proceed to read:

I. "Whether bad air has any direct effect on the sight, or only mediate or resultant from other immediate bad effects?"—In considering this question, I shall first assume that the real meaning of the question is, whether bad air has a direct effect upon the organ of vision, and not simply as to its perceptive power, which the word sight, taken literally, would imply. I shall then consider the question as it actually reads, that is, as affecting the sight—the perceptive power.

I have no doubt in my own mind, and I believe it is universally admitted, that vitiated air has a direct, irritating effect on all mucous membranes; and I feel convinced from my own observation that the mucous membrane of the eye is peculiarly susceptible to its influence. This is shown by the fact that repeated attacks of inflammation of the mucous membrane of the eye, which have occurred in a vitiated atmosphere, and which have resisted all curative means, are often cured at once and prevented from recurring when a wholesome supply of air is obtained—all other conditions remaining the same.

I have, then, no doubt in my own mind that bad air alone, acting as the primal cause, may set in train a series of morbid processes, which may, and often do affect not only the working capacity and integrity of the organ, but which may lead even to its total destruction. Thus simple irritation of the mucous membrane of the eye may, and often does, pass into actual inflammation, which, increasing in violence, may proceed from part to part, till the entire organ is involved, and thus the sight become impaired or totally lost.

That bad air, in the ordinary sense of the word, and excluding irritating gases, has a *direct* effect on the sight—that is, on the amount of perceptive power—I do not believe, nor do I understand this to

be the question submitted to me. But that an impairment or loss of vision may be attributed to bad air, as a direct result, follows, I think, from what has been stated above.

II. "Whether size and quality of type may cause disease?" First, in regard to size of type. The smaller an object is, the nearer it has to be brought to the eye to be perceived. It has been accepted by oculists that an object such as type embraced by an angle equal to 5′ (five minutes) is the smallest object which can be recognized by the average normal eye. According to this formula, the smallest print which a normal eye could readily recognize at a distance of one foot is about one-fiftieth of an inch, at eighteen inches (the average distance at which the book is held by an adult), the smallest recognizable type would be about one thirty-second of an inch. The normal eye should never be subjected for any length of time to a type smaller than twice this size—that is, two-thirty-seconds (one-sixteenth) of an inch—and it would be better after middle life to employ a type even a little larger than this. The fact, however, that spectacles are now so commonly used, removes in a great degree, by restoring to the eye its former focalizing power, the necessity of a larger type with advancing years. Young children should never hold the book nearer to the eye than ten inches, and adults never farther from the eye than eighteen inches. As soon as perfectly distinct vision at this distance cannot be obtained, and, if obtained, cannot be easily maintained, recourse should be had to spectacles.

The finer, then, the type, the closer the book has to be brought to the eye, and the greater the tension or demand on the focalizing power, and the muscles which are used in bringing both eyes to bear at the same time upon the object viewed. These two acts make what is called the act of accommodation of the eye, and "tension of the accommodation"; that is, long-continued use of the eye upon objects brought close to it is considered, by all authorities, one of the most, if not the most, fertile causes of progressive near-sightedness. This condition may be accompanied by morbid processes, which may involve the deeper seated membranes of the eye to such a degree as to not only affect the vision but to even destroy it. Too fine print, therefore, may be, I think, looked upon as a factor in producing eye disease, affecting not only the external but also the internal parts of the organ. On the other hand, too coarse print is wearisome to the eye, as it requires more exertion of the muscles governing the movements of the eye—that is, for a given amount of matter; and especially is this the case when the breadth of the page is, as usually happens, increased, so as to keep the just proportion of matter on a line. This leads me to observe that usually the breadth of the page is, if anything, too great. This causes undue exertion on the part of the muscles, which move the eye in a lateral direction and is apt to lead to confusion in finding the next succeeding line. It is for this reason that the narrow form of English blank verse is so little fatiguing to the eye.

The popular prejudice in regard to the double column on a page would be untenable were it not that the same economy which restricts the amount of space also reduces the size of the type and crowds the lines together. A double column page which is well printed and

properly divided is certainly preferable to the same amount of matter extending in a single line across the entire page. The distance between the lines—that is, from the bottom of one line to the top of the other—should be about four thirty-seconds or one-eighth of an inch. Nearer than this is apt to be confusing—farther, fatiguing. The distance, however, can be considerably less with a page with a double column than in one with a single. If a double column page is used, the distance between the columns should not be less than one-fourth of an inch.

Quality of Type.—The less contrast there is between an object and its surroundings the more difficult it is to see the object, and the closer it has to be brought to the eye. A faintly printed page has, therefore, to be brought nearer, oftentimes very much nearer, than a well printed page of the same type. There is nothing more wearisome to an eye than an indistinct and blurred image of a familiar object, and no more striking example of this could be found than blurred or faintly printed type. This should be sharply cut, and what is technically called "heavy-faced," in contradistinction to "light-faced" type. Of the former, a common example is the English, of the latter, the American. The ink is also a matter of importance. The English ink, like the type, is vastly superior to the American. The color and quality of the paper has also an influence upon the ease with which the act of vision is performed. For while it is true that there should be as much contrast as possible between the type and its surroundings, care should be taken to avoid all glare or dazzling of the page. Pure white paper, such as is ordinarily used in this country, should not be employed, most of all when it has, as it often does in the cheaper papers, a metallic lustre with a bluish tinge. I have come to the conclusion that, as a rule, a very light, almost imperceptible, yellow tint is the best. This is known in the trade as "natural" tint, from the fact that it contains no dye whatever, and has been bleached only to a moderate degree. It has the color of unbleached cotton cloth. It is, however, expensive, as it can only be made from the best stock; still, a very good imitation can be had in some of the second-class papers at a moderate cost.

The paper should be thick enough; not be transparent, should have a close, fine texture, and be free from sponginess.

From these facts, I am of the opinion that both in respect of size and quality imperfect type may be considered as a factor in the production of eye diseases.

III. "Whether too long and constrained attention to one object without rest or variety will cause disease?"

That prolonged tension of the eyes may be the primal cause of a great number of diseases of the eye is admitted by all authorities, and the more fixed the gaze and the narrower the field of view, the greater the danger. If it be true that continued tension of muscular and nervous force unduly exhausts the energy of any organ, it is doubly true of the eye. The nervous energy of the retina, sensitive and rapid as it is, is just as rapidly exhausted, and the act of reading would be unbearable after a few minutes, if the eye did not quickly change its position from letter to letter and from line to line. Diversity of action is as much a necessity in the case of the

eye as of any other organ, for an easy and lasting performance of its function.

No eyes, in my opinion, should be used more than an hour, at the farthest, in the act of reading or writing, without an interruption of the gaze, and it would be better if several if not many interruptions should take place in the same time. This usually happens in the case of adults for some reason or other, but children, in order to complete their tasks in an allotted time, are often compelled to use their eyes without sufficient interruption by the hour together.

It would be impossible, and out of keeping with the condensed character of these remarks, to enumerate here all the diseases which may arise from prolonged tension of the eyes on near work. But there is one affection produced by it which is so frequent in its occurrence and so unfortunate in its results, that I cannot refrain from saying a word in regard to it, using substantially the language of one who is the greatest authority on the subject, instead of my own.

Professor Donders thus remarks: "The distribution of near-sightedness chiefly in the cultivated ranks points directly to its principal cause—tension of the eyes for near objects. Respecting this fact there can be no doubt; three factors may here come under observation: 1st. Pressure of the muscles on the eyeball in *strong* convergence of the visual axes. 2d. Increased pressure of the fluids resulting from accumulation of blood in the eyes in the stooping position. 3d. Congestive processes in the eye, which, tending to softening, give rise to extension of the membranes. Now, in connection with the causes mentioned, the injurious effect of fine work is by imperfect illumination still more increased. To this it is to be ascribed that in schools where, by bad light, the pupils read bad print or write with pale ink, the foundation of near-sightedness is mainly laid, which, in fact, is usually developed in these years."

IV. "Whether the angle at which the light strikes the eye is important—that is, ought it not to fall, not full in the face of the child, but first on the book or work, and be reflected into the eye?"—Before answering this question precisely as it now stands, I should like to premise it by making the general assertion, that not only is the direction in which the light comes important, but also its quantity and quality. Reduction in illumination is, as a rule, precisely equivalent to a reduction in the size of the object. Therefore, the less the light, the nearer an object has to be brought to the eye, and the greater the strain in the act of vision.

It is impossible to fix with any scientific exactness just the size that a window should be to give sufficient light for visual purposes, since this must vary with the exposure and surroundings of the room; but it has been reckoned in Germany that for a class-room containing 20 persons there should be at least 4,000 to 6,000 square inches of glass, which would give to each scholar from 200 to 300 square inches, or what would be represented by a pane of glass from 14 to 17 inches square. Such a room as this would be sufficiently lighted in any part. A room 20 feet square should not contain less than 70 to 80 square feet of glass, and it may be laid down as a rule that too much light cannot be obtained in a room, as all excess of glare can be guarded against by artificial shades, if properly applied.

More light enters a room from the same amount of glass from the south than from the north, and a southern, south-eastern or south-western exposure are better than a northern, north-eastern or north-western, especially for class-rooms, and this, too, simply in regard to the amount of light, and independent of the purifying influences of direct sunlight.

That a north room is better for the purposes of the artist is due to other causes, and does not affect the general rule.

The light should not come from directly in front, and especially is this the rule when artificial light is used. For when the light comes from directly in front of the person, the pupil of the eye becomes unduly contracted, which is equivalent to reducing the quantity of light, since less light enters the eye from the object viewed, while it is exposed to too much light reflected from the surrounding objects, and from the direct rays from the source of illumination.

Neither should the light come from directly behind, as the object then lies in the shadow of the body. Nor yet from the right side, because in writing the shadow of the hand falls across the page, and a moving shadow over a lighted surface not only reduces the quantity of light and leads to a stooping position, but it is also more annoying to the eye than a uniform reduction in the illumination of even a greater degree.

The best direction for the light to come is from the left side, and from rather above than below the level of the head. Windows, therefore, should not run down too near to the floor, as they often do in class-rooms and offices.

I cannot agree with the opinion often expressed, that the best direction for the light to come from is from directly above.

I cannot refrain from adding in this connection the conclusion founded on Dr. Cohn's elaborate investigations in regard to the near-sightedness among school children in Germany. He thus formulates it. "The narrower the street in which the school house was built, the higher the opposite buildings, and the lower the story occupied by the class, the greater the number of near-sighted scholars."

I should then, from these considerations, say that the angle at which the light strikes the eye is important, and that it ought not to fall full in the face of the child, but first on the book or work, and be reflected into the eye. EDWARD G. LORING, M.D.

MR. JACOB F. MILLER remarked that he had taken great interest in this matter of school hygiene, because he had two little boys whose eyes were at certain times affected in a very deleterious manner while attending public school, and he was anxious to ascertain the cause. For that reason he was very much interested in hearing the paper of Dr. Loring, especially on that one point where he discusses excessive crowding, and the influence of the bad air in the rooms, injuring the sight; and when an abundance of pure air is allowed to enter, this difficulty is overcome.

Now, in the light of the explanations given by Dr. Loring, it can be seen how it is that vitiated atmosphere will produce defective vision; and pure air will prevent it. It is so in our court rooms and school houses, and other places wherever there are large numbers gathered

together and compelled to remain for any length of time. But as soon as the windows and doors are thrown open and the pure air is admitted, a change for the better takes place.

I can scarcely suggest anything, he continued, in addition to what is contained in the paper of Dr. Loring; but it seems to me that the subject is one of the gravest importance. As to the direction from which the light should come, it makes a great difference whether it comes from the right or the left, over the right or left shoulder; when the light comes over my left shoulder, it injures my eyes less than when coming over my right.

I have been very much instructed as well as interested in the paper; and if other members of the Society have been as much instructed and interested as I have been, your labors will not have been in vain.

"Modern Improvements."—DR. O'SULLIVAN: I wish to say a few words on the subject of school hygiene, although I do not desire to repeat what has already been said, or go over any new ground; but in connection with the remarks relating to near-sightedness which have been made, it is important to put in this important point, and that is the fact which has been brought out with great clearness—that near-sightedness is progressive, and that it usually appears about the age of eight years. The child is not born near-sighted. It begins to develop this condition about the eighth year, or a little later, perhaps, in certain cases; therefore, the conditions mentioned as predisposing causes being present at the places of instruction, are charged with producing this state of affairs. This is so as regards the delicate tissues of the eye. We might say that this condition of affairs is not confined to the eye itself; but that it also affects the mucous membrane—the lining membrane of the lids. We have the same class of mucous membrane lining the upper air passages; and we can readily imagine what effect the vitiated atmosphere of the school room has upon mucous membrane, and how readily it can be transmitted from one part to another.

I wish to say that there is not a day in the year that the rule, simple as it is, as to how the light should enter the room, the placing of the desks and furniture of the school-room, the lowering of the windows, etc., is not violated. It is but a day or so since I entered one of the new school houses of this city—one of the largest of our public school houses, and one which has been opened to pupils not more than a month. I entered the primary class-room on the ground floor, and found there sixty-nine little ones with their teacher. There was a small window facing a side wall not more than two feet distant, which separated the side of the building from the wall; through this small window they received all the light they had, and it was admitted so as to strike their books immediately over the right shoulder. When the door was opened it led immediately into the play-ground, and the water-closet was in close proximity to it, so that the effluvia could not help but enter with all *its* freshness into the school-room where sat the members of the rising generation. This was all the ventilation and light provided.

I went into the upper rooms of the primary department, and there I found the teachers in one of the middle rooms, and the children

seated as close as they could be packed, and I was informed by the principal that the gloom was so great on a dark day that the little ones could not see the figures on the black-board. Even on the day of my visit, which was beautiful in its brightness and sunlight, the room was very gloomy. Yet this is one of the recently erected school edifices, "erected at great expense," because of the "modern improvements," by the great city of New York. Can you doubt what the result upon the health and eyes of school children will be?

I followed my investigations still farther. I went up into the top or highest floor, the male department (for it is well known that the boys are placed upon the highest floor), and there I found, with but one exception, that the benches were placed in a position where the light entered in a manner not according to the laws of hygiene—and there was a defect in the sight of the children. And to add to the insalubrious state of affairs, the water-closets used by the teachers were placed in close proximity to the class-room, and communicated with it by an open window! And I have been informed by one of the teachers that there is a new school-house on the west side, opened but a month or so, in which there is the same arrangement throughout, even to the water-closet in the upper story communicating with the corresponding class-room. I do not refer to these things in a spirit of fault-finding, nor yet, indeed, of criticism; but it certainly proves to us that school architecture, which is one of the most expensive items in public expenditure, is not founded upon scientific or sanitary laws, and that the recommendations made by this Society must be obvious.

I must conclude by saying, in behalf of myself and other members of the Committee, that we are under many obligations to Mr. Wood, President of the Board of Education, for the manner in which he has received the Committee, and the cordial way in which he fell in with the ideas of the Society. I hope that he may continue to enjoy many years of his useful and busy life.

———o———

Sanitation in India.—Lord Napier of Magdala, now Governor of Gibralter, in reply to an address recently presented by the Sanitary Commissioners of the town, made some interesting remarks on the value of sanitation in India. He said: "As an illustration of the immense value of the sanitary acts, I may mention that in India the erection of one building where sanitary requirements were observed was the means of saving to her Majesty the lives of a number of men who would have made two regiments. Under the old arrangements, where no sanitary rules were observed, the death-rate of the place had been 9½ per cent., but on the erection of one good building it was reduced to 2½, thus saving 7 per cent. of lives by one act of sanitary reform. I am certain that Gibralter has greatly benefited by your labors, of which it may be said that you hold the bills of mortality in your hands, for every step gained may be counted as a life saved. You still have many more improvements to carry out, and I hope to see you frequently when you wish to consult me, as I shall always consult you in any difficulty in which your local knowledge may be of service."

A CITY OF HEALTH.

To the Editor of THE SANITARIAN:—I was greatly interested in reading, in the last number of THE SANITARIAN, the account of the great English sanitarian, Edwin Chadwick, of his labors and his success in the cause of humanity and health, and also your judicious, very able and timely remarks on "The Importance of a State Board of Health." No subject is of more importance, none more neglected. It is amazing that States and cities should go on from year to year, in this enlightened age, utterly neglecting, as a rule, the means of preventing disease, but spending thousands in efforts to cure or stay the deadly progress of a disease after it has been generated and set in motion by causes which by a little prudence and care might easily have been removed, and disease and death thereby greatly mitigated, or wholly prevented by timely measures. Prevention, if not better than cure, is of first importance. Health, next to life, is the first great gift to us; the gem of health, to our children, our families and to ourselves, is of more value than all rubies and pearls, than all the diamonds of Golconda, or all "barbaric gold." What can we do without health? What poor, miserable, helpless beings we become when our health is gone, broken, ruined; and yet there is no earthly gift that we are more prodigal of, more careless and often wasteful of than of our health; and when lost or broken, what will we not do or give to recover or restore it?

Dr. B. W. Richardson, of London, not long ago* set forth the admirable advantages which would accrue to a city founded on strictly sanitary principles—a city which should comprehend in full all the benefits which pertain to the best chosen situation in regard to climate, soil drainage, water supply, house construction, food supplies, disposal of refuse, public buildings, churches, schools, hospitals, places of amusements, factories, fire-stations—*all* the appurtenances and avoidances necessary to the promotion and maintenance of the highest standard of human health. But the great merchant prince of New York, A. T. Stewart, even before the appearance of Dr. Richardson's paper, had the sagacity to found a city—a "Garden City"—on a tract of land which had remained utterly neglected from the first settlement of this country by Europeans, on account of a singular belief or fatuity that it was barren or unfit for culture. Yet, strange to say, this tract of land, on which Garden City is situated, possesses all the natural advantages suited to Dr. Richardson's ideal "City of Health"; and, with the required sanitary skill in the construction of this new city, Long Island will ere long exult in possessing the veritable City of Health so graphically though fancifully depicted by Dr. Richardson.

The great Hempstead Plains, which Mr. Stewart "took, held and possessed," is a remarkable tract of country. An old historian, who described it more than two hundred years ago, says: "Towards the middle of the Island lyeth a plain, sixteen miles long and four miles broad, upon which plain groweth very fine grass that makes exceeding good hay, and is very good pasture for sheep and other cattel."

*THE SANITARIAN, vol. IV, p. 68, *et seq.*

There were about sixty thousand acres in this wonderful piece of land; it was, in fact, a prairie—a great and beautiful upland meadow producing "very fine grass that makes exceeding good hay." I will try in few words to describe the situation, surface, soil and geological structure of this celebrated spot.—The westerly part of the "Plains" is about fifteen miles from Brooklyn, and can be seen from the spires and "high house-tops" of Bedford. Starting from the South Ferry, where the rails of the old L. I. R. R. were seven feet above tide water; and at Bedford, two and a half miles, 73 feet; at the watering place formerly called Howard's Woods, on the high ground this side of East New York, 83 feet; thence descending to Jamaica Depot, where the rails are 40 feet above tide water; thence easterly, the grade is uphill all the way to Hicksville, twenty-five miles from Brooklyn, or South Ferry, where it is 150 feet above tide water. This is the summit level of the L. I. R. R., and is near the north-easterly border of Hempstead Plains, which extends north of Hicksville to the southerly edge of the Hills of Jericho. At Hempstead Branch, or Mineola, about a mile north of Garden City Hotel, the rails are 103 feet above tide water. These distances and heights are given to show the situation or position of this great tract. It is an elevated table-land with a southern aspect, with a descent of about 20 feet to the mile. It is bounded on the north by the high grounds or ridge of hills running through the island from west to east; with this regular and gentle descent to the southern shore of the island, the under drainage is most complete and perfect. Then the surface of the "Plains," from west to east, is gently undulating, in long swells, elevations and depressions, and, these depressions looking southwardly, have exactly the appearance of the dried bed of streams; and following them down towards the south borders of the Plains, streams of purest water are found in many of them.

These rollings or undulations of the land present, in fact, three drainage surfaces on each of them, one southerly of about twenty feet to the mile, and one on each side gently sloping to the west and to the east from the centre of these elevated sections, thereby presenting a most wonderful natural drainage. The surface soil is a dark loam from fifteen inches to two feet in depth. It looks just like what a lady would select to fill her flower-pots with, and is highly productive, and on which grew and grows the "very fine grass that made exceeding good hay," according to the old chronicle; and what is remarkable, this grass never runs out—it was always fresh and green. And it may here be remarked that the natural grasses of Hempstead Plains are the most nutritious grasses that can be found in the Northern States.

The turf upon this upper and dark soil is so thick and strong as to require a team of three horses with a strong plow to turn a furrow through it. Under this layer of dark loam is a layer of yellow loam, of about equal thickness, in many places a clay loam or clay; and under these, generally at a depth of about two feet and a half or three feet, is the firm, compact gravel and sand that everywhere form the main body of Long Island, for it is literally a "child of the ocean."

These undersands and gravel are firm and compact (there are no quicksands), and intermingled with fine silicious sands, comminuted, almost levigated, forming the most complete and perfect filter that can possibly be made; and the water found under this whole region,

and flowing out of it, is of the purest and sweetest kind, and never fails. It has been claimed recently that a great subterranean river flows under Hempstead Plains, or such is the inference from the inexhaustible flow that is found from 20 to 30 feet under the surface.

The climate is the finest in the State of New York, most healthful and pleasant. There are no stagnant waters nor malarious lands within miles of this highly-favored and most interesting region.

There is no place like it for the foundation of a City of Health—the great work has been done by nature. There are not men and horses enough in this, the great Empire State, to form such a foundation for a City of Health; and if Mrs. Stewart will improve these great natural advantages and found the first City of Health in America, she will become a benefactress to her race, and gain immortal honor.

April 5, 1877. LONG ISLAND.

———o———

Health Better than Wealth.—Little Martin was a poor boy who had no father or mother. He earned his bread by going on errands. One day on his way home he sat down to rest, and to eat his piece of dry bread near the door of an inn. As he sat there, a fine carriage drove up, and the master of the inn came out to serve two gentlemen who were in it. One of them was very young—not much older than Martin—and Martin thought to himself he should like to be in his place. When he looked at his own crust of bread and his worn clothes, and then at their fine things, he could not help saying aloud:

"Oh, dear, I wish I had that young gentleman's grand coach. I wish I could change places with him."

The other gentleman, who was the boy's tutor, heard this, and told it to his pupil, who made signs to Martin to come to him.

"So, little boy," said he, "you would like to change places with me, would you?"

"I beg pardon, sir," said Martin, "I did not mean any harm."

"I am not angry," said the young gentleman; "I only wish to know if you are willing to change places with me?"

"Oh, now you are joking," said Martin; "no one would wish to change places with me, and walk so many miles each day, and have nothing to eat but a dry crust."

"Well," said the young man, "I will give you all I have, if you will give me all that you have and I have not."

Martin did not know what to say, but he was told to speak freely.

"Oh, yes," said Martin, then, "I will change places with you."

But when the young gentleman stepped out Martin saw that he was very lame. His legs were bent so that he had to walk with crutches. His face was pale and thin, too, like that of one who is often ill. Martin then thought that health was better than a fine carriage.

"Will you change places with me now?" asked the youth. "I will give you all I have to be strong like you."

But Martin said, "Oh, no; not for the world."

"I would gladly be poor," said the young man, "if I could run like you; but as it is God's will that I should be lame, I try to be happy and thankful as I am."—*Sabbath Recorder.*

DEFORMITIES IN THEIR RELATION TO HYGIENE: HIP-JOINT DISEASE.*

By T. P. Corbally, A.M., M.D.

"L'art de découvrir est plus précieux que la plupart des choses qu'on découvre."
Fontenelle.

If there be any part of Professor Sayre's book† that may be considered as representing his *peculiar views* more distinctly than another, it is, we think, his lectures on Morbus Coxarius or *Hip-Joint Disease.* Under this head we naturally look for the enunciation of some *new* truth, the propagation of some *new* discovery, or the establishment of some great principle heretofore unknown to the profession. If an architect claim the right to rank with Michael Angelo, he must rise above the level of the stone-cutter who fashions the block, and of the mason who places it in position in the edifice. A French writer, who essayed to continue the work of Bichat, said very truly: "Autre est l'œuvre du maçon autre est l'œuvre de l'architecte."‡—The business of the mason is very different from that of the architect.

The position Professor Sayre occupies before the professional public is peculiar—in some respects equivocal; but the position is one of his own choosing. He wishes us to concede to him the rank of one who has been urged by medical gentlemen of the highest standing, both at home and abroad, "to prepare a work on Orthopedic Surgery and Diseases of the Joints, setting forth *his* ('my') peculiar views of their pathology and treatment;" while, at the same time, he seems unwilling to assume the responsibility of such a position, and tells us that the "lectures were delivered extemporaneously and without preparation." If he presents himself to us under the form of Proteus, it is to be hoped that, like that divinity, he will enlighten us by his prophetic powers; and not, when consulted, refuse to give an answer, and elude our grasp by assuming different shapes, and finally disappear as a gust of wind or a puff of smoke.

The chief points at issue between him and the rest of the profession are the Etiology of the disease, and the question of Spontaneous Luxation. Under the head of Etiology, he sets forth his views in distinct, if not in *terse*, phrase, which, for convenience of comparison, we divide into propositions, as follows:

"I. *Almost all* surgical authorities agree that Morbus Coxarius

---

* Concluded from page 81, February number.

† Lectures on Orthopedic Surgery and Diseases of the Joints, delivered at Bellevue Hospital Medical College during the winter Session of 1874–75, by Lewis A. Sayre, M.D., Professor of Orthopedic Surgery, Fractures and Dislocations, and Clinical Surgery, in Bellevue Hospital Medical College, etc., etc., etc., etc. Illustrated by 274 wood engravings, 8vo., pp x., 476. New York: D. Appleton & Co., 1876.

‡ "*Essais de Physiologie Philosophique*," par M. Durand, Paris, 1866.

(hip-joint disease) is *invariably* the result of a contaminated constitution; in other words, that it is *essentially strumous* in its origin. II. This has been the *universal* opinion, and the doctrine has descended from teacher to student, and is still extant among the *majority* of surgical practitioners. III. It has been so often taught and enforced by frequent repetitions, that *nobody* considered it worth while to question its truth; but *nearly* all have taken it for granted that an assertion so positively made, and *universally* accepted, must be based on mature investigations. IV. When I first entered the profession I accepted this doctrine taught by our fathers, but must confess that I never was *fully satisfied* with regard to its *correctness*. V. Now, while I revere the labors of those great men in the advancement of scientific investigation, I *must* be *permitted* to *question what is questionable and to doubt what is doubtful.*"—Page 231.

We have not the least doubt that the medical profession, noted as they have ever been for great liberality, comprehensiveness of views and tolerance of individual opinions, whenever they are sincerely and honorably held, will readily and heartily permit the learned Professor, at all times and under all circumstances, to *question what is questionable* and to *doubt what is doubtful.* Would not, however, the caution given by Sancho Panza to the valiant knight, Don Quixote, be specially appropriate in this instance? "Consider, sir, that those things that look like giants are but windmills." The author further adds: "From what has been said, you have probably already drawn the inference that I regard the disease as one almost invariably due to a traumatic cause, and not dependent upon some constitutional taint."

Etiology.—In the year 223 Coelius Aurelianus attributed the disease to blows on the hip, and to violent abduction of the limbs.

In 1722 the illustrious French surgeon, J. L. Petit, made the first important contribution to the subject of coxalgia. "This luxation," he says, "is caused by contusions resulting from a fall on the trochanter."*

Sabatier, in 1780, wrote a memoir on the subject, in which he attacked what he considered the *too exclusive* opinion of Petit in regard to the etiology of the disease.

Dzondi, in a memoir published in 1833, is almost as exclusive as Petit. He rejects traumatic lesions in part, and substitutes what he calls "*l'irritation rheumatique*"—in other words, the arrest or the suppression of cutaneous perspiration.†

Vicherat, in 1840, maintained that the majority of cases of coxalgia were of rheumatic origin. "*La plupart des coxalgies sont de nature rheumatismale.*"

In the same year appeared the remarkable work by Bouillaud, in which he proclaimed the doctrine that rheumatism is an *inflammation*, that *rheumatic arthritis* differs from *traumatic arthritis* only because it arises from cold, while the latter is caused by mechanical violence; so that, as he says, this arthritis *a frigore* is, like all other

* "*Cette luxation, dit-il, est causée par la contusion qui résulte d'une chute sur le grand trochanter.*" J. L. Petit, Mémoirs de l'Académie Royale des Sciences pour 1722, p. 117.

† La cause principale est la cause rheumatismale, c'est *presque* la *seule*.

diseases of the same origin, the type of inflammatory diseases: "Que cette arthrite *a frigore* est, comme toutes les autres maladies de la même origine, *le type* des maladies inflammatoires." *

Maisonneuve, in an exhaustive treatise, "De la Coxalgie," published in 1844, says: "These *exclusive* opinions (referring to *scrofula, tuberculosis, rheumatism,* etc.) have never been able to obtain more than a *small number* of *partisans;* the great majority of authors admit the existence of a variety of causes." . . . "As for ourselves," he continues, "we think that the great majority of causes capable of producing *white swellings* in other joints are equally powerful in causing coxalgia in the coxo-femoral articulation." †

Again, Maisonneuve, speaking of traumatic causes in general, says: "Contusions—such as result from a fall on the feet, on the knees, on the trochanter major, or the strain of the ligaments caused by the violent separation of the limbs, a misstep, etc.—have been pointed out by so many authors as, if not the only cause, at least the exciting cause of coxalgia, that it would be absurd to deny their influence. We have already said that J. L. Petit admitted *no* other cause. We do not adopt this extreme view, yet we attribute to traumatic causes a very large share in the production of this disease."‡

Nélaton, in defining the term, *Tumeur Blanche*—white swelling—says: "In the present state of the science, if we consider only the results furnished by pathological anatomy, we may always say, with Richet, that every *white swelling* has been, at its commencement, *an arthritis* or a synovitis." Then, speaking of the etiology of hip-joint disease, he adds: "The causes of coxalgia are those that produce white swelling. We will not, therefore, enumerate them; we must, however, *insist* upon the importance of *falls* on the region of the trochanter, which were considered by J. L. Petit to be the only cause of this disease."§

Giraldès says that coxalgia is a disease essentially chronic in character. "Sprains, forced marches, punctured wounds of the joint, or any traumatic cause capable of producing inflammatory action, may give rise to coxalgia."‖

It may be observed, in reference to these authorities and many others that could be cited, that even the most strenuous opponents of Petit did not, in any instance, assert a *universal cachexia*; they simply denied a universal traumatism. The obscurity that seems to surround this subject reminds us of the quaint alliteration:

> "Light seeking light,
> Hath light of light beguiled."

---

* "Traité clinique du rheumatisme articulaire."

† J. G. Maisonneuve, Thèse de Concours, Paris, June, 1844.

‡ Thèse de Concours.

§ "Nous devons cependant *insister sur les chutes* sur la région trochantérienne, que J. L. Petit regardait come la cause ordinaire de la maladie qui nous occupe." Élémens de Pathologie Chirurgicale, par A. Nélaton, chirurgien de l'hôpital Saint-Antoine, etc. Tome II, p. 267. Paris, 1847.

‖ "Les entorses, les marches forcées, les piqûres articulaires ou un traumatisme quelconque capable de produire des accidents inflammatoires, pourront dégénérer en coxalgie." Leçons cliniques sur les Maladies Chirurgicales des enfants professées par M. J. Giraldès 4 me Fascicule, p. 611. Paris, A. Delahaye, 1868.

SPONTANEOUS LUXATION.—There are two points in connection with this subject that we propose to consider:

I. After enumerating the symptoms of the second and third stages of the disease, Professor Sayre continues: "It was long believed that this change of symptoms was due to a real dislocation of the head of the femur upon the dorsum of the ilium, brought about by a gradual destruction of the upper rim of the acetabulum by caries, thus allowing the head of the bone to escape from the socket."

II. "The first to challenge this theory was the late Dr. Alden March, of Albany, New York.

"In his paper upon this subject read before the American Medical Association, and published in their 'Transactions' for the year 1853, he established the fact that dislocation does not really take place."*

The objections which we advance under both of these heads will apply equally well to Dr. Sayre's proposition; but only those given under the second, will apply to Dr. March's claim.

I. There is evidently a wide difference of opinion in regard to the meaning of the term *Luxation*, especially in respect to its application to that form which has, by nearly all writers, been called "*Spontaneous Luxation.*"

Evidently there is no necessity for so warm a discussion over a matter so simple. The doctors seem to be actuated by much of the spirit of the philosophers, of whom Candillac has said: "Each sect seems to be most interested in devising terms that are obscure and devoid of sense. By this means they endeavor to hide the *weak* points of so many frivolous and ridiculous systems."†

On page 252 Professor Sayre gives us *his* idea of luxation: "As long," he says, "as the acetabulum retains the remnants of the head of the femur within its cavity, it should not be called luxation of the femur." In the passages which he cites from Druitt, Miller, Bell, Dupuytren and Brodie, *their* ideas of luxation may be inferred from the use they make of the word, with almost the precision of a definition. He cites from Brodie: "*The head of the femur was lodged on the dorsum of the ilium.* The capsular ligament and synovial membrane were much dilated; and at the superior part their *attachment to the bone was thrust upward*, so that, *although the head of the femur was no longer in the acetabulum, it was still within the cavity of the joint.*" Professor Sayre remarks on this passage: "Here we have the testimony of Sir Benjamin Brodie that '*the head of the femur was lodged on the dorsum of the ilium;*' and in almost the next sentence he says: '*It was still within the cavity of the joint.*' Comment seems to me unnecessary, for this cannot be called luxation, according to the ordinary definition of that term."—Page 253. On page 252 the author says: "As the *progressive absorption* goes on within the joint, there is a constant *deposition* taking place outside of the joint, by which means the *acetabulum with the capsular ligament* and contents is, as it were, slipped upward upon the dorsum of the ilium; so that, *instead of a luxation of the hip*, we have, in fact, a *displacement of the acetabulum itself.*" Is it a greater laxity of expression to say that the femur was found on the

* Sayre, page 249.

† "Essai sur l'origine des cannaissances humaines." Tome 1, chap. xi. *De la signification des mots.*

dorsum of the ilium, than to say that the acetabulum, etc., is slipped upward upon the dorsum of the ilium? Larochfoucauld said truly when he wrote: "La vérité ne fait pas tant de bien dans ce monde que ses apparences y font de mal."

Maisonneuve, speaking of the relations of the articulating surfaces, says: "Sometimes, notwithstanding the great destruction of the parts, the articulating surfaces, eaten, destroyed, preserve their normal relations; but frequently, too, *the normal relations no longer exist: this is what constitutes spontaneous luxation.*"* This is the sense in which the term is used by all French writers, and by nearly all German and English authors. Hueter calls it *inflammatory luxation*—"Die entzündlichen Luxationen," and says: "Nearly all cases are caused by suppuration of the joint; it generally arises from destruction of tissues, more rarely from distension of the capsule."†

Maisonneuve, in summing up the views of pathologists at different periods, says: "*The third theory*, more modern than those named, is maintained by Sabatier, by Paletta, and admitted by Boyer, Ficke, Beguin and nearly all surgeons, is, that luxation is the result of caries of the bone, either of the cotyloid cavity or of the head of the femur, or of both; this doctrine is founded on the study of numerous pathological cases."

II. "The fourth theory belongs to Larrey: this celebrated surgeon, who considered luxation, in such cases, as a phenomenon of *extremely rare occurrence*, attributed its production in *all cases* to some *traumatic* cause."‡ Maisonneuve again quotes Larrey, Clinique Chirurg., p. 333, approvingly, as follows: "But Larrey has remarked, very justly, that luxation is not only *not* a necessary phenomenon of coxalgia, but that it seldom or *never* occurs spontaneously; and that, consequently, it is impossible to found upon it the distinction of the disease into periods; he remarks, and this remark is of great importance for the support it gives to the experiments of Parisse—he remarks, I say, that the shortening of the limb, in the second period, is due, not, as is generally believed, to a luxation of the femur, but to caries, or to the sudden escape from the cavity of the joint of the fluid which it contained." Again Larrey says: "The inflammatory swelling of the cartilages is not the cause of luxation: luxation is *never* really *spontaneous*, but the result of some mechanical effort, favored by the morbid condition of the articulation."§

We have cited these passages in detail, because they not only effectually dispose of the claims of Dr. Alden March, as contained in the passages above quoted, but also refute our author's proposition. Larrey published his views in 1817: Dr. March read his paper in 1853. The same views were held by many other surgeons, before Dr.

---

*"De la Coxalgie." Thèse de Concours, Juin, 1844.

†"Die entzündlichen Luxationen werden in den meisten Fällen durch den Ausgang der Coxitis in Eiterung bedingt, und werden, wie ich schon erwähnte, häufiger als Destructionsluxationen, seltener, als Distentionsluxationen, aufzufassen sein." Klinik der Gelenkkrankheiten, *ut supra*, p. 683.

‡"La quatrième appartient à M. Larrey: Ce chirurgien célèbre, qui considérait la luxation coxalgique comme un phénomène extrêmement rare, faisait toujours intervenir quelque cause traumatique dans sa production."—Maisonneuve, *ut supra*.

§ Larrey. Clinique Chirurgicale, tome III, p. 331, Paris, 1817.

March gave them publicity. Richet says: "However, that form of luxation called spontaneous, often favored by the destruction of the exterior portion of the rim of the cotyloid cavity, is produced very slowly, and, in the great majority of cases, it does not take place, so that many surgeons, among whom are M. Desprez, positively deny its occurrence."*

We must conclude, then, that the historical part of his theme is not that in which the Bellevue Professor is destined to win his highest honors.

In the preceding remarks on coxalgia, we have not attempted to controvert any of the propositions advanced by Prof. Sayre. We have endeavored to show that, what he puts forth as *his* peculiar views were advanced by eminent writers, some of them generations ago; and it will be seen that the theory of universal traumatism, so boldly asserted by Petit, gave rise to as sharp a controversy during his time and subsequent to it, as any that has since taken place. The writer's earnestness and enthusiasm may have impelled him, in his extemporaneous lectures, to advance more than he really intended; he has certainly stated more than he can prove. However, we must do him the justice to state, in his own words, the principal arguments he advances in support of his peculiar views.

On page 232 he says: "I do not suppose there is a person in this room who cannot call to mind some old fellow, with a shortened hip, perfectly anchylosed, who yet has a ruddy face, a good, healthy complexion, and is a vigorous, robust old man. If he had had scrofula in his system, it would have remained there, and when his hip had recovered the man would have been a miserable old fellow, after all. The very fact of his becoming a vigorous, robust man after going through all the exhausting effects of hip-joint disease, proves, in my judgment, that the disease is not of constitutional origin." This argument may be stated thus:

"SOME *old fellow* (with a shortened hip, perfectly anchylosed) *is a robust old man.*

"*If* he had had scrofula in his system, it would have remained there, and the man would have been a miserable old fellow.

"Therefore: (the very fact of *his* becoming a robust man proves, in *my judgment*, that) *the disease* (?) *is not constitutional!*"

What is the middle term in this syllogism, with which the extremes are compared, in order to show their agreement or non-agreement? How does the author draw a negative conclusion from two affirmative propositions? We might prove that a broken leg is not a constitutional disease in the same way.

Some old fellow (with a shortened leg, from previous fracture) *is a robust old man.* If *he* had had scrofula in his system, it would remain there after the fracture united, and the man would be a miserable old fellow. Therefore: (the very fact of *his* becoming a robust man proves, *in our judgment*, that) the *disease* (the fracture) *is not constitutional.*

But the doctor, we are sure, is too good a logician to attempt to draw a *general* conclusion from the *particular* example he gives as one of his premises.

*Richet. *Opus citat.*, p. 930.

His next proof, omitting qualifying terms, is as follows:

"The additional fact that, in so many cases, the joint has been exsected, when the patients have (subsequently) become vigorous, is good evidence that the DISEASE *is not constitutional.*"

Another instance of a general conclusion from *particular premises.* We will take one more argument from the same page:

"Now it is not necessary for me to prove that adults are nearly as liable to be affected with scrofulous diseases as are children, the less number of cases seen being due mainly to the fact that these sickly children are very liable to die before reaching adult life."

We will not contest this proposition. If they die before reaching adult life they will not have scrofula; and should they then acquire hip disease, it cannot certainly arise from *constitutional taint.* We do not mean to say that the Professor intended by these, nor any of the other numerous fallacies to be met with in his book, to mislead the reader; we are sure that they are among the things which, "upon its perusal in the proof," he would like to have changed. Thus, on page 233, he qualifies the sweeping assertions previously made as follows: "All things considered, a smaller amount of injury will produce the disease in one of these miserable, sickly children than in a healthy, robust child."

In speaking of luxation he argues in this way: "Whenever any one of them (the authors previously mentioned) has made a *post mortem,* or has cut into the joint for exsection, he has invariably found that *no luxation* had taken place, but that the 'head of the femur was still within the capsular ligament,' much absorbed, probably, and *frequently separated* from the *shaft* of the *femur* entirely, thus permitting the *trochanter major* to slip upon the dorsum of the ilium; and this, no doubt, has been mistaken for true luxation. I have seen this condition of the parts very many times, and seen the mistake made by most excellent surgeons. At other times the acetabulum has been found 'much enlarged by *absorption,* and *extending upward* and backward, as if Nature had made an attempt to form a *new joint in this direction!*'" The italics are the author's. This is making a very nice distinction. The head, nearly destroyed by caries or by absorption, is separated from the femur, so that the shaft of the bone is driven upwards until the *trochanter major* rests on the dorsum of the ilium; and this is, technically, not a luxation, even though "Nature had made an attempt to form a *new* joint in this direction." If a particle of the head remains within the acetabulum, it is *not* a *luxation;* if a small portion remains attached to the neck, and is carried upwards with it, then we have a true luxation. On this distinction rests his whole argument, and on it is based his issue on this point with the whole profession. Suppose one portion of the head were found within the acetabulum, and another portion on the dorsum of the ilium, still adherent to the neck—should we call it a *luxation* or a *displacement?*

The opinion of Giraldès is that held, probably, by the great majority of practical orthopedists at the present day: "This luxation, which surgeons have called *spontaneous,* is not common in coxalgia. But although it is rare, it is nevertheless real; and the opinion of some American surgeons, who, within the last few years, have attempted to demonstrate that there was displacement rather than luxation, is certainly exaggerated."

We have already stated that Professor Sayre "regards the disease as one almost invariably due to *traumatic* cause, and *not* dependent upon some constitutional taint." He continues: "To what has already been said upon this point, we may add the positive evidence of statistics." The collection of statistics has been, with many, a favorite method of establishing their *peculiar* opinions. Since 1860, Price, Foch, Sayre, Hodges, Lefort and Eulenberg have collected very detailed statistics of resections and other things relating to hip-joint disease, but, generally, they receive little consideration. Giraldès says: "The statistics of Sayre, quoted so often, do not deserve the attention that has been given to them; they contain a great many errors, as well as many things that are of no value."* We are aware that figures are supposed always to represent the truth; taken as numbers, they invariably represent what they stand for; but, in their application to concrete objects, they are not so reliable. Our author assures us that "The immense majority (of such cases), I may safely say seventy-five per cent., have occurred in the most vigorous, robust, . . children." In the great majority of cases, we think, the surgeon who has no preconceived ideas as to the etiology of the disease will find it difficult to elicit from the friends anything that will satisfactorily account for it. If the surgeon's manner causes them to feel that it must be caused by some injury, they will be very likely to remember that, at some time, the child stumbled or fell, but the circumstance was so common that they thought no more of it.

Hueter says: "The coxitis of childhood, whose origin we are now about to examine, can, sometimes, be traced to a contusion in the region of the hip. Yet the facts in this particular are not very reliable, and we can only say that at least the majority of cases occur *without any recognizable injury;* and that a *contusion* in the region of the hip, during the early stages of the disease, can only hasten and aggravate it."†

Admitting the uncertainty of figures, we think that the question will be fairly represented by the following statement. In one ward in this city (Brooklyn) the deaths in 1873 were as follows:

Under 1 year, 427=37.6 per cent. of whole number of deaths.
From 1 to 5 years, 289=25.5 per cent. of whole number of deaths.
" 5 " 20 " 72= 7.2 " " " "
Over 20 " 326=29.7 " " " "

It would not be far from the truth to say that one-third die under one year, another third between one and twenty, and a third over twenty years. Those in the first class die, generally, of acute diseases, before they show any evidences of deformity. Of the second class, more than eighty per cent. die between one and five years, and the twenty per cent. between five and twenty years; that is, four among every five die before they attain the age of five years, while one lives to be

*"La Statistique de Sayre, citée souvent ne mérite pas les honneurs qu'on lui a faits; elle renferme beaucoup d'erreurs et de non valeurs." Leçons Cliniques, *at supra*, p. 652.

† "Doch sind die Angaben in diser Beziehung meistens nicht sehr genau, und es lässt sich nur so viel sagen, dass mindestens die Mehrzahl der Fälle ohne nachweisbare Verlezung entsteht, und dass eine Contusion der Gelenkgegend während der Initialstadien der Entzündung ihren Verlauf beschleunigen und verschlimmern kann." *Opus citat.*, p. 602.

twenty years. From one year to five is, then, the critical period in childhood; it is the period at which so many run to the brink of the grave and barely escape with life. It is the period, too, at which scarlet fever, diphtheria, and many other diseases, leave behind them the seeds of later trouble which every physician dreads; it is just the period, too, at which deformities make their appearance. Again, the number of living children under five years of age is only one-tenth of the whole population. Of these about 250 per thousand, or twenty-five per cent., die every year; that is, more than one-third of the deaths occur in one-tenth of the population; so that we cannot avoid the conclusion that there is some fearfully destructive element at work to prevent an increase of population. It would be very strange, then, if constitutional taint, physical debility or that *quid ignotum* which all recognize, though they cannot definitely assign it its proper place, would not have an important influence in the production of coxalgia, as well as of other kinds of deformities.

But, to look at the disease from a higher stand-point, Hueter tells us that the synovial membrane claims, for many reasons, the particular attention of the surgeon, especially in regard to the hip-joint. "My practical surgical studies," he says, "have shown me that I have not overestimated the importance of this problem. The changes in form which take place in that part of the hip-joint enclosed within the capsule during life present little similarity to analogous changes that take place in the ankle-joint or in the knee."*

The same author, on page 603, writes: "In children, inflammation of the hip-joint is, in an overwhelming majority of the cases, primarily an ostitis. Inflammation of the bones of the acetabulum, as well as of the femur, gives rise to coxitis, and in each of these parts of the skeleton there exists a predisposition to ostitis; and although the same tendency exists in other joints, yet in this one there is a peculiar predisposition to terminate in *secondary inflammation.*"

When we consider the complex structure of the acetabulum—that each of the three bones which enter into its formation has its separate point of ossification, its own cartilage, its particular synovial membrane; that these are all developed separately, and yet in harmony; that at and before puberty changes take place in the pelvis, as well as in the pelvic organs, that occur nowhere else during life—we are not surprised that there is found in it a special tendency to certain forms of disease.

Then the glutei and other muscles around the joint are attacked by a special kind of degeneration, which has been most carefully studied by Hayem. This change he has described under the title, "*Substitution amyloïde des muscles,*" and has found it characterized by the progressive destruction of the contractile element of the muscles.

The subject is so extensive, that we must refer the reader who is interested in it to works on the histology as well as the pathology of the bones, especially of the femur. On this part of his theme our author is particularly weak; and we are forced to the conclusion that, notwithstanding the many good things to be found in the work before us, as well as in a few less extensive treatises, the American work

* Hueter. *Opus citat.*, p. 587.

on the subject, the one that will fairly represent the profession abroad, is yet to be written. The author has shown good judgment in avoiding the *abstract principles*, which, in his introductory lecture, he promised to teach.*

In the following passage the learned Professor displays at once his superior professional skill and his good taste. After detailing the history of a case of periostitis, he continues: "Our diagnosis is periostitis of the trochanter major, with celulitis and abscess around the *joint*, but *not involving the articulation*. At this moment Dr. Gross, of Philadelphia, happening to come into my office, I asked him to examine the boy, who was still naked upon the table. He stated that it was a case of hip disease, 'so well pronounced as to require no examination;' but, after drawing his attention to some of its peculiarities, he immediately acknowledged his mistake." Dr. Gross, in this instance, displayed a degree of magnanimity not always shown by his professional brethren. Perhaps he can afford to be generous. If, however, Dr. Gross, wishing to politely comply with the request of Professor Sayre, made a hasty examination, and then, not feeling any responsibility in the matter, stated that the disease was "so well pronounced as to require no examination," then Professor Sayre's criticism might have been well omitted. If, on the other hand, Dr. Gross, after a careful examination of the case, was really mistaken, then the learned Professor would have displayed more magnanimity by omitting the incident. He then says: "I saw no more of this boy (?) until September 22, 1868, when Mr. Lewis, his father, (?) called to inform me that he was in perfect health, and that my diagnosis had (?) been correct, although (?) upon his return to Massachusetts the year before, Dr. Warren, Dr. West, Dr. Bigelow, of Boston, and others, had (?) still informed him that the disease was in the hip."† It is probable that when Dr. Warren, Dr. West and Dr. Bigelow gave their opinions, they did not expect to have them reversed by the judgment of two such high authorities as *Professor* Sayre and *Mr.* Lewis.

The Professor claims to have introduced the term Rotary-lateral Curvature; at least, the claim is implied in the statement: "*I prefer to call it the* (?) *rotary-lateral curvature.*"—Page 386. Again, on page 389, having described the action of the muscles in producing the disease, he says: "This is the starting-point of the so-called lateral curvature; but as it begins in a rotary movement of the bodies of the vertebræ, *I prefer to call it rotary-lateral curvature.*" We believe that others have laid claim to priority, both as to the pathological

* The reader may consult in "Virchow's Archiv für Pathologische Anatomie und Physologie, und für Klinische Medicin," January, 1874, p. 202; an article on the "Absorption of Bone and Giant-cells"—Untersuchungen über Knochenresorption und Riesenzellen. Von Dr. J. v. Rustizky aus Kiew; and a second article, in the same number, on the femur—"Betrachtung über das Os femoris." Von Dr. Merkel, Professor der Anatomie in Rostock. In the July number of the same journal, for 1874, will be found a very full discussion of the normal and pathological development of the long bones—"Ueber das normale und pathologische Wachsthum der Röhrenknocken." Von Dr. G. Wegner, Assistenten am Chirurgischen Universitätsklinikum in Berlin.

†Page 341.

view of the question involved, and the term to be applied to it. On neither of these points are we prepared to express an opinion.

It is well known that, of the great number of females that suffer from this disease, nearly all are born without deformity. Nyrop gives a list of 1,918 of his own cases, many of them accompanied with minute descriptions. He then says: "Of this number, 1,611 were females and 307 males; these I have classified as follows:

	Age.	Females.	Males.	Total.
	¾ to 5 years	115	74	189
	5 " 10 "	284	66	350
†	10 " 15 "	613	66	679
†	15 " 20 "	431	65	496
	20 " 25 "	111	28	139
	25 " 30 "	44	3	47
	30 and over	13	5	18
		1611	307	1918*

There are many things in this table that will impress even the most indifferent observer, and notably the great disproportion between the number of males and females. Again, the rapid increase in numbers in females from five to fifteen years of age, and the tendency to decrease in the number of males during the same period. We notice, also, the terrible ravages of the disease, in females, from five to ten years—they being nearly one-third of the entire number. This strengthens the theory that there is, especially in girls between the age of five and ten years, an extraordinary tendency to weakness and decay. Prof. Sayre says, page 389, that "this deformity occurs much more frequently in girls than in boys." He adds: "Rotary-lateral curvature of the spine may be corrected before the bones, ligaments and ribs become fixed in their abnormal position; but when that has occurred, the deformity will be permanent. It is important, therefore, to be able to recognize the deformity in its earliest development."

Since a more extended experience has confirmed the author's original views, it is probable that he will still adhere to them, even though they stand in the way of a broader grasp of his subject, and limit the field of his usefulness. To enable him to reach a high point of eminence, an author should be free from bias, and not allow his judgment to be warped by any *peculiar views*—otherwise he will be known for his *impracticable views*, rather than for *sound views* and scientific attainments. We are aware that the Professor enjoys a wide reputation both at home and abroad; still we are disposed to acquiesce in the judgment of the poet:

"Si minus errasset, notus minus esset Ulysses."

†These figures include the school age of children. The enormous total, 1,044 cases, occurring between ten and twenty years, in girls, much more than half the whole number, should cause parents to reflect; and if we include the cases between five and ten years we will have 1,328, nearly 70 per cent. of the whole number of children, and more than 82 per cent. of the whole number of girls, occurring between the ages of five and twenty years.

* Nogle Praktiske Anvisninger for at henlede Forældres Opmærksomhed paa Rygradens Sidekrumning, etc. Ved Camillus Nyrop. Kjobenhavn, 1875.

Editor's Table.

State Boards of Health.

Georgia.—Second Annual Report, 1876.—This report is a clear and painful exemplification of ineffective legislation, consequent upon that kind of State parsimony which pretends to recognize the value of a measure by the enactment of laws, while withholding the necessary means for their execution. The President and Secretary of the Board both dwell upon the "*glaring defects in the law,*" emphasizing in particular, the fatal features to its faithful execution—the omission of proper remuneration for labor and means to secure compliance with its requisitions, and suggest such amendments in this regard, as will hereafter, if enacted, render the law efficient. These recommendations find melancholy strength in the full report which follows on the condition of Savannah last summer, and the devastating epidemic which it invited. Especially notable in this connection is the paper by Dr. Ely McClellan, U. S. Army, on the *Relations of Health Boards and other Sanitary Organizations with Civic Authorities.* Willing, the State of Georgia has shown herself to be, that the health of her people *may be* promoted; that epidemics *may be* prevented; that exotic diseases *may be* estopped at her portals; that the registration of vital statistics *may be* systematized; and, in short, that all the means known to sanitary science for promoting the health, and preserving the lives and prosperity of the people *may be* exercised—provided it can be done *as a privilege—without money, and without the right of procedure.* Such, indeed, was the status of the Georgia State Board of Health in June last, a mere privilege-if-you-please body, when the seeds of yellow fever, brought from Havana, began to be sown on the piers, and in the filthy marshes of Savannah. The danger was appreciated by the State Board of Health. But "*there was a Board of Health for the city* (of Savannah), *consisting of the Mayor, ex-officio, other ex-officers and the Chief of Police. The inspectors of the Board were policemen, and policemen were employed to supervise the disinfection of infected localities.*" *This* Board had both money and authority, but it was devoid of brains; it had not the knowledge to call upon any competent sanitarian to use preventive measures to stop the progress of disease. Self-willed, with pecuniary means at its disposal, and puffed up with conceit, the advice of the President of the State Board of Health was unheeded. The consequences to the City and State, as summed up by a writer in the Savannah *Morning News,* are as follows:

1.	Loss by the expenditures of over 8,000 refugees	$500,000
2.	Loss in sales of merchandise	500,000
3.	Loss in diminution of cotton for export	75,000
4.	Loss to railroad corporations	200,000
5.	Loss in rents and depreciations of property	300,000
6.	Loss of taxes to the city	50,000
7.	Loss of taxes to the State	100,534
8.	Loss of professional men	300,000
9.	Loss to hotel proprietors	25,000
10.	Loss of wages to the working classes	1,237,960
11.	Loss in human life (the total number of deaths during August, September, October and November was 1,574; from yellow fever, 940; from other diseases, 634. Adults, 1,104, minors, 470. Adults estimated at $2,000 each; minors, $509 each)	2,443,000
12.	Loss in interment of the dead	31,480
13.	Loss in the care of the sick	37,500
14.	Loss in the cost of special sanitary work	41,000
15.	Loss in amount expended in charity	120,883
		$5,862,357

And to this might be added many thousands more, as the cost of sickness to those who recovered, and of poverty entailed. To depict the human suffering under such an ordeal—who can attempt it? And in all this Georgia is not singular. Some other States there are, which have enacted laws establishing State Boards of Health, as *acts of grace* to those who advocate them, withholding authority and means for the execution of powers, which they pretend to confer, and then, when the trial comes, the legislators and political potentates, for the time, coolly wash their hands, and declare themselves innocent.

Alas, alas! with the hope that this lesson of Georgia may not be wholly in vain, we commend it to the legislature of New York and other State legislatures which have the subject under consideration, that they may be admonished thereby.

Besides the epidemic of yellow fever, which absorbs the body of the Report, Dr. G. F. Cooper, Sanitary Commissioner for the Third Congressional District, contributes a valuable paper on *Food, etc.;* and Judge B. H. Bigham a brief paper on *Lunacy*, earnestly advocating the necessity of establishing an additional asylum, there being *but one* in the State, and only 625 insane persons under treatment, out of an estimated number of 1,800.

Minnesota.—Fifth Annual Report for 1876, pp. 87, consists almost exclusively of the labors of the Secretary, Dr. Charles N. Hewitt. The parsimony of the State appropriation of $1,000 only, for the use of the Board in the promotion of the public health, being a mere complimentary permission to the members of the Board to labor voluntarily. Notwithstanding, the financial statement shows a balance of $17.81 still on hand at the date of the Report. The labors, of the Board, however, and of the Secretary in particular, bear no relation whatever to the State appropriation. The Secretary, while performing his duties as the executive of the State Board of Health, with the sanction of his associates, and at the request of the regents has also served the University of the State as Professor of Public Health, and this service seems to have materially aided him in his effort to promote popular interest in sanitary matters generally. Placing himself in intimate communication with the public schools, he

has found in them a sphere of duty for the promotion of health, second to none which comes under his care. The common defects in regard to school-house construction, space, warming, ventilation, and the relation of these conditions to the spread of contagious diseases and infant mortality, and a careful study of the vital statistics of the State for the last five years, are full of profitable instruction for all who would learn their first and most important duties for the prevention of sickness—the proper care of infants and children.

Committees of the Board have, during the year, made personal visits and inspections of all the State institutions, from which a brief general report is submitted, which shows them to be, as compared with those in other States from which we have reports, in exceptionally excellent condition. The Deaf and Dumb Asylum is the only one represented to be deficient in space. Imperfect house drainage and deficient ventilation of this asylum, and also of the penitentiary, were the only defects demanding the special attention of the authorities.

In virtue of the pains taken by the indefatigable Secretary to keep himself in constant communication with all institutions having the care of groups of persons, and the wholesome instruction which he has imparted to their keepers; the means taken to prevent small-pox and other contagious diseases, and the diffusion of information generally, on sanitary matters, throughout the State, there have been *no epidemics* to record. The average death-rate of the whole population (if returns were complete) is estimated at about 15 per 1,000.

Wisconsin.—First Annual Report for 1876, pp. 130, comprehends the law of establishment, which is comparatively liberal; the careful organization of the Board under it, and a special paper by each of its members: *Small-pox and its Prophylaxis*, by E. L. Griffin, M.D., President; *Sewerage and Drainage*, by S. Marks, M.D.; *Construction and Ventilation of Public Buildings*, by Gen'l James Bentliff; *Mental Hygiene*, by J. Favill, M.D.; *Food and Domestic Beverages*, by O. G. Selden, M.D.; *Registration*, by Joseph Hobbins, M.D., and a summary of its objects, duties and work by J. T. Reeve, M.D., Secretary.

Altogether, the Board has made a most auspicious beginning. The well chosen subjects for primary work, and the able manner in which they are discussed by the members, are well calculated to secure the co-operation of the medical profession throughout the State, and to popularize the work of the Board among the people, which are essential conditions of its success.

New Jersey has enacted a State Board law, making the fourteenth State of the Union thus provided.

Tennessee is also to be congratulated for having passed a law creating a State Board of Health, making the fifteenth.—It is constituted of "five physicians of skill and experience, regular graduates of medicine, who have been engaged in practice not less than ten years." The following have been appointed: Drs. J. D. Plunket, R. B. Maury, E. M. Wight, J. M. Safford and T. A. Atchison. The Board has organized by electing Dr. Plunket President. The election of a permanent Secretary has been postponed one year; meanwhile the President has appointed Dr. J. Berrien Lindsley for Secretary.

New York.—The Legislature still holds in abeyance the bill, as published in our March number, which has been favorably reported in the Assembly. We have assurances from influential members from both Houses that it will come up in due time and pass; but unless the true friends of the measure continue their efforts among members, to ward off trivial amendments, and to urge it forward, we fear it may be lost for the want of time. By the way, we regret to see that our usually watchful contemporary, the *Louisville Medical News*, April 7, repeats an error of the *Medical Record*—soon after corrected—in regard to *this* bill, (see *Record* No. 330, March 3d). It is wholly devoid of anything partisan.

Yellow Fever.—Bahia, Brazil: From the *Gazeta Medica da Bahia*, for January (published at the *end* of the month), we learn that during the month of January, yellow fever, which was supposed to have left Bahia, assumed very alarming proportions. There was great reason to fear that, in the coming months, it would continue to widen the circle of its destructive influence; as the points from which it was then spreading were very numerous throughout the capital.

Those who suffered most, were, as usual, foreigners recently arrived in the city, or those who had resided there but a short time; but even among the natives, and people coming from the surrounding country, and some from other provinces, there were many severe and fatal cases.

As was said in the previous number, there was not the slightest guarantee for the lives of those who were liable to contract the disease. The *Revista* advises all such persons to leave the city until the danger is subdued, as the only security against its attacks.

From the *Revista Medico Quirurgica* (Buenos Ayres), we learn that the yellow fever is also raging as an epidemic in many places in Brazil, and that the sanitary authorities of Buenos Ayres are enforcing a rigid quarantine of all who arrive from such places.

The President of the Board of Health (Consejo de Hygiene) has addressed a communication to the Mayor of the city (Presidente de la Municipalidad), recommending vigilance in the inspection of slaughter-houses, which are considered the principal source of infection; a careful inspection of the markets, and the fruits sold in them, and resold throughout the city. The *Revista* criticises the condition of the hospitals and lunatic asylums with a degree of freedom and a severity quite unusual, but justified, probably, by the proximity of the danger surrounding them.

Vital Statistics.—The annual death-rate per 1,000 of the population in the United Kingdom, in the first quarter of the year 1876, was 23.3. In England and Wales, 23.5, being 1.1 below the average rate in the corresponding quarter of the preceding ten years; in Scotland, 24.1 or .64 below the average; in Ireland, 21.3 or .1 below the quarter's average for the preceding five years—but registration in Ireland is said to be very imperfect. In England and Wales the deaths in the quarter were 142,269, being 87,711 fewer than the births; in Scotland, 21,294, 11,039 fewer than the births; in Ireland, 28,290—9,442 fewer than the births. Thus the 300,045 registered births in the United Kingdom show a natural increase of 108,192 souls by their excess over the number of registered deaths. The Board of Trade returns, state the emigration at 17,648, of which

number, 2,464 were foreigners. The present resident population is, in round numbers, not quite 24¼ millions in England and Wales, a little over 3½ millions in Scotland, and a little over 5,300,000 in Ireland, making a total of rather more than thirty-three millions.

Prussia.—From the *Deutsche Medicinisch Wochenschrift*, we learn that the number of deaths which occurred in Prussia, in 1875, was 724,804; of which 411,215, or 56.73 per cent. of the whole, were of persons under fifteen years of age, and that the mortality was greatest among children in the inverse ratio to age—greatest soon after birth and gradually decreasing. Much the largest mortality is among children born out of wedlock, and from two to five months old.

Buenos Ayres.—From a very complete summary of the vital statistics of Buenos Ayres, given by the "*Revista Medico Quirurgica*," we condense the following:

The population of the city is about 200,000, and is rapidly increasing. During the year 1876 there landed on its shores 31,000 emigrants, and 12,000 left during the same period, leaving a net gain of 19,000 during the year. If we assume the rate of mortality to be the same among the different nationalities within the city, then the population would be about as follows: Natives, 73 per cent., 146,000; Italians, 11.14 per cent., 22,000; Spaniards, 5 per cent., 10,000; French, 4 per cent., 8,000; and of all other nationalities, 7 per cent., 14,000. The number of marriages celebrated during the year was 1,344, or 6.72 in every 1,000 of the inhabitants. The tables give no estimate of the number of births.

The whole number of deaths was 5,277, being 26.38 per 1,000. Of these, 887 died in hospitals founded by natives, Italians, Spaniards, French and others, the result of private charities; 172 in foundling hospitals and institutions for the poor; and 126, or nearly 2½ per cent., in charitable institutions under the direction of the municipal authorities. The number of deaths in charitable institutions was 1,185, or 22½ per cent. of the whole number of deaths in the city.

The death-rate among children is even heavier than with us. The deaths were:

Under 1 year	1,795	or 34	per cent.	of whole.
From 1 year to 3	664	" 12.6	"	"
" 4 years to 9	216	" 4.9	"	"
Making	2,675	" 50.69	"	"
From 10 years to 20	274	" 5.2	"	nearly.
" 21 " 30	599	" 11.35	"	"
" 31 " 40	536	" 10.16	"	"
" 41 " 50	392	" 7.4	"	"
" 51 " 60	278	" 5.3	"	"
" 61 " 70	170	" 3.22	"	"
" 71 " 80	153	" 2.9	"	"
" 81 " 90	58	" 1.1	"	"
" 91 " 100	36	" 0.7	"	"
" 101 " 110	4	" 0.08	"	"
Not specified	102	" 2.1	"	"
	5,277			

This table shows two prominent facts: the excessive death-rate under one year, and the large proportion that die over sixty years; nearly one in every six of those that survive ten years lives to be over sixty.

The greatest number of deaths occurred from diseases of the respiratory organs:

From diseases of respiratory	1,432	or 27.1	per cent.	of whole.
" " of organs of innervation	1,269	" 24.	"	"
" " of gastro-intestinal organs	528	" 10.	"	"
" " of circulatory system	393	" 7½	"	"
" human passions	291	" 6	"	"
" diphtheritic diseases	206	" 4	"	"
" surgical diseases	197	" 4	"	"
" hepatic "	111	" 2	"	"

The deaths during the summer months were:

December, January, February	1,442
Autumn—March, April, May	1,304
Winter—June, July, August	1,305
Spring—September, October, November	1,313

The uniformity shown by this table is remarkable; the slight excess during the summer months being insignificant.

The city, and formerly the whole country, was named Buenos Ayres from its genial climate. The warmest month during 1876 was January, when the thermometer reached its highest point 82°.5; the lowest point reached during the same month was 62°. The coldest month was June, and the range of the thermometer was from 54° to 42°. The average of the highest points reached during the twelve successive months was 68°, and the average of the lowest 51°; the mean for the whole year was 60°.

When we consider the limited range of the thermometer—from 42° to 82°—during the whole year, and the trifling difference in the mortality in the different seasons, it seems difficult to account for the unusual death-rate from diseases of the respiratory organs.

The highest point of the barometer was 765 millimeters in June, and the lowest, 759.79, in January. The hygrometer ranged between 83.1 in July and 62.1 in December, the point of saturation being 100; the average for the 12 months was 71.5.

Episcopal Longevity.—Of six deceased Bishops of the American Protestant Episcopal Church, their united ages amounted to 472 years; the youngest at time of death was 68; the oldest, 89; and the average age 78 years and 9 months.

American Medical Association.—The Twenty-eighth Annual Session will be held in the city of Chicago, Ill., on Tuesday, June 5th, 1877, in Farwell Hall, at 11 A. M.

Secretaries of Medical Societies are earnestly requested to forward, *at once*, lists of their delegates to Wm. B. Atkinson, M.D., Permanent Secretary, Philadelphia, with their residences, in order that a correct record may be made of all who are in affiliation with the Association.

The Transactions of the Associations for 1876 (vol. xxvii, pp. 719), constitute one of the most valuable volumes hitherto published, its value being much increased by the large number of papers on sanitary subjects, an abstract of which was published in THE SANITARIAN, vol. 4, p. 322, et sequentes, and subsequently, two papers in full: *Trials and Triumphs of a Sanitarian*, by Dr. Benjamin Lee, and *Ventilation of Dwellings*, by Dr. A. B. Stuart, which, notwithstanding their much more extensive circulation, we are sorry to see are omitted from the volume. Many of the other papers have also been made familiar to the profession by abstract or in full, through the medical journals; but the volume is none the less, indeed, it is rather the

more valuable on that account, as a collection of carefully prepared papers, with the discussions and criticisms by many of the most accomplished men in the profession. To the publication committee much credit is due for the general excellence of their work, though there are some errors; for example: p. 320, Dr. Bell is represented as saying that he had advised whiskey as a prophylactic of yellow fever. On the contrary, what he did say was, that he had known it to be advised, but never with benefit; that he thought it to be injurious rather than beneficial in such cases, and always discountenanced it.

Life Insurance Investigation.

A "smelling committee" of the Legislature of New York has been at work for several weeks, trying, under the guidance of a reckless lobby, to create some great scandal among the life insurance companies. The attempt has utterly failed, and the result has been to make the people ashamed of their representatives.

But some good may come of the effort yet, if the press and the public treat it properly. The Legislature, having conclusively shown this year how not to do any good, there is the more occasion for a wiser and better treatment of the subject hereafter That the present laws on the subject are not only inadequate, but very injurious to the interests of policy-holders, begins to be clearly seen on every side. To reform them is not and cannot be the work of a hungry and corrupt lobby, nor of a body of legislators acting, with whatever motives, under their stimulus. It requires the calm, mature judgment of statesmen, who will take time to master the relations of the business to the people, and to devise measures for the protection of the great interests at stake.

We do not know whether it is too late to hope that the Legislature now in session will create the proper commission for this work. If they will not do it, the cause will but have lost a year. It must come to this in the end; and the sooner the whole subject is committed to a select body of experts, to study with care and to report at leisure, the better for all concerned. As for the bill now before the Assembly, and the legion of measures in the hands of the present committee, including the report of their inquisition, which they are expected to present in a few days, it would be wasting time and labor to bestow any criticism upon them. They are and can be nothing but the crude expressions of unbounded ignorance and prejudice, and the sooner they are forgotten, the better.

A RECORD OF LOSS DISBURSEMENTS BY THE COMPANIES BELONGING TO THE CHAMBER OF LIFE INSURANCE.

Period.	Death Claims.	Endowment Claims.	Total.
9 months—April to Dec., 1874...	$12,842,312 12	$ 733,258 93	$13,575,571 05
12 " —Year 1875.....	19,362,099 54	1,648,342 48	21,010,442 02
12 " — " 1876.....	18,108,457 24	2,704,781 05	20,813,238 29
Month of January, 1877.....	1,453,314 22	472,912 08	1,926,226 30
" " February, 1877.....	1,356,448 78	287,946 71	1,644,395 49
35 months—Total	$53,122,631 90	$5,847,241 25	$58,969,873 15

The Public Health.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,071,786—4 wks. end'g Mch. 24	804	2124	25.76	71	3	85	78	55	0	33	8		3	38	48	341	388
Philadelphia, 825,500—4 wks. end'g Mch. 31	480	1314	20.69	25	32	34	20	10	28	7	24		3	11	7	202	217
Brooklyn, 506,000—5 wks. end'g Mch. 31	485	1087	22.33	21	3	94	73		58	19	5		23		10	149	159
St. Louis, 500,000—2 wks. end'g Mch. 31	102	245	12.74	4		1	2		1	8	5				9	40	71
Chicago, 420,000—4 wks. end'g Mch. 31	244	562	17.39	7	1	15	81	3	9	2	10		13		9	83	72
Baltimore, 350,000—4 wks. end'g Mch. 31	294	593	22.02	15		12	53	38	8	14	7		5		6	105	87
Boston, 363,000—5 wks. end'g Mch. 31	261	708	20.28	28		43	15	1	17	7	10	1	10		22	121	95
Cincinnati, 265,000—4 weeks end'g Mch. 31	117	339	16.63	13	7	4			3	9	11		3		2	65	130
San Francisco, 300,000—month of Feb	187	497	19.88	28	36	12	2	5	1	12	1	8	1		4	45	39
" " Year 1876	1977	5669	18.89	336	345	481	81	12	90	69	188		46		210	642	487
New Orleans, 210,000—month of March	198	713	40.74	8	236	3	3	10	2	2	5		4		22	81	84
Washington, 160,000																	
Pittsburgh, 152,000																	
Newark, 126,000																	
Providence, 103,000—month of March	48	141	16.3	3		20			3	1	3		1		1	25	17
Milwaukee, 100,781—month of March	96	202	24.05	1	40	14	16	1	1		1	1			5	12	19
Rochester, 70,000																	
Richmond, 72,500—4 wks. end'g Mch. 31	31	102	18.28	6		2			1		1		1		3	25	8
New Haven, 60,000—month of March	32	98	19.4	1		6	8		3	2	1		2			15	12
Charleston, 57,000—5 wks. end'g Mch. 31	38	134	24.42														
Toledo, 50,000																	
Mobile, 40,000—month of Feb	21	69	20.7	11	5						5		1		2	8	6
Dayton, 36,000—month of March	13	37	12.33			2		3								6	5
Nashville, 27,000—month of March	18	53	23.55	2		9	1			3					2	7	5
Wheeling, 26,000—month of March	19	49	21.00	2			4			1	2					11	12
Buffalo, 170,000																	
Knoxville, 13,000—month of March	9	25	23.07					2	1							5	7
Paterson, 39,000—month of March	30	79	24.31	4		4	2		1	1						15	15
Petersburg, 20,000—4 wks. end'g Mch. 24	10	41	26.65	4		1										7	4
Lansing, 8,400																	
Selma, 8,000																	
Elmira, 20,093																	
Yonkers, 17,500—month of March	12	40	27.42				2		1	1	2		2			7	2
Memphis, 45,000—month of March	30	117	31.2	8		2	6	1			1		3		6	22	26
Erie, 26,057—month of March		37	17.03	2		1	1		1		2					15	1
Detroit, 115,000																	
Syracuse, 60,000—month of March	16	66	13.2	3		1	3		1		3	1			2	12	11
Bowling Green, 6,000—3 mo. end'g Mch. 15	4	17	11.33	2		2							1			2	
Evansville, 46,000—month of Feb		61	15.91	3		1	1		3		1	1	3		3	4	10

—o—

Correspondents under this head are earnestly requested to send their reports, promptly, and latest estimated population

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during three weeks ending March 3d, 17,765 births and 10,869 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 6,896. The mortality from all causes was, per 1,000—in London, 21.33; Edinburgh, 20.33; Glasgow, 27; Dublin, 28.33; Portsmouth, 15; Norwich, 20; Wolverhampton, 26.33; Sunderland, 21.66; Sheffield, 21; Birmingham, 23; Bristol, 24.66; Liverpool, 26; Salford, 29.66; Oldham, 28; Bradford, 23; Leeds, 21.66; Hull, 21; Newcastle-upon-Tyne, 24.33; Leicester, 21.33; Manchester, 28; Nottingham, 22.66. Other foreign cities at most recent dates, per 1,000—Paris, 29; Rome, —; Vienna, 28; Brussels, 21; Berlin, 26; Hamburg, 26; Calcutta, 30; Bombay, 40; Madras, 107; Amsterdam, 24; Rotterdam, 31; The Hague, 22; Christiana, 27; Breslau, 30; Buda-Pesth, 46; Turin, 29; Alexandria, 41; Copenhagen, 27; Munich, 36; Naples, 44.

New York's abominably filthy streets, Harlem flats, and short allowances of water, are already beginning to cast their shadows as the days begin to lengthen; and everybody in the community, except the Health and Police authorities, is alive to the necessity of having something done, to forestall the harvest of disease and death, which these conditions make fruitful on the setting in of hot weather. The city is still without a place or means of effectually disposing of garbage. To build suitable furnaces and burn all that is combustible, and utilize the remainder, has been repeatedly suggested; but there seems to be no one connected with the public service, with ideas sufficiently practical to adopt this suggestion or to improve upon it. Hence the people are left to their own resources. From many years' practical experience in our own household, we take the opportunity of assuring all concerned, that daily cremation of all table and kitchen refuse is an easy, effectual and healthful means of disposing of it, and to confess our inability to comprehend any reason why the same process cannot be adopted on a large scale.

Brooklyn's "sunken lots" are of a piece with New York's Harlem flats, used and tolerated in the same vile manner—as garbage receptacles in the winter, and pest marshes in the summer; and under the same sort of shirking responsibility between the Health and Police authorities. Last year, when the stench was at high tide, by permission of the Health authorities the sewers were tapped to drain them; as a matter of course, the stench increased. Next, under the same direction, one of the foulest of the stench holes was pumped out, and its several feet thickness of decomposing mud, on a well known to be water-tight bottom (from the nature of the underlying hard-pan soil), without any effort to drain it, was covered over with earth. Over this there is now another winter's accumulation of mixed ashes and kitchen garbage. Meanwhile, public works are progressing, *pari passu*. The old wooden block pavements, in a state of decay, are being plastered over with asphalt and tar, as a reserve fund of miasmatic gases, to intensify the danger of small-pox from neglected vaccination, and the poisonous emanations from defective sewerage of over-crowded and filthy school-houses, asylums, prisons and cow stables.

A Model Tenement House, corner of Hicks and Baltic Streets, is the only really striking evidence of sanitary progress in Brooklyn. It is richly worth the attention of the Health, and other public authorities, not only of Brooklyn but of New York, to see how well and how healthfully and economically workingmen's tenements may be built and arranged under the guidance of intelligence on sanitary matters. Mr. Alfred T. White, the founder and builder of this tenement, is entitled to the gratitude of the public for this noble example of his intelligence, skill and humanity. The building is founded on well drained ground, and contains forty suites of apartments, of two and three rooms each, besides shops and stores on the ground floor. The striking features are a light and airy stairway, partly on the outside, and fire-proof, with hallways so arranged as to secure separate entrance and privacy to every apartment; free access of air to rear as well as front, with 800 cubic feet allowance to every person, and good ventilation; all the apartments are provided with independent sinks, tubs and water closets, plumbed in the best manner; each tenant has a coal-closet in the basement, and the ashes and garbage, sent down by a chute, are collected in carts in the rear. The arrangement throughout is an immense advance on the wretched tenement dens which commonly obtain in New York and Brooklyn, and worthy of the highest commendation. The whole house is under the care of an intelligent janitor, who exercises a general supervision of the premises, rendering them altogether peculiarly attractive to the working people who would secure the best and safest surroundings for their families on the most economical terms.

Literature.

Management and Treatment of the Insane.—Nothing better indicates the progress making in this department of medicine than the multiplication of literature upon the subject. The reports and papers now before us all show marked advancement over years gone by, and a growing interest in the proper care of the insane all over the country. Dr. Nathan Allen,[1] one of the Commissioners of Massachusetts, dwells upon the increase of insanity, inquires into its causes, and urges "prevention rather than cure," as the highest degree of wisdom and the best public economy.

Dr. C. F. McDonald[2] particularly notices "the frequency of cases, among the *convict* insane, in which 'sin and madness' are so closely allied as to almost defy separation.... The chief characteristics of these cases are absence of moral sense, absence of delusions, while the intellectual faculties, such as they are, apparently remain intact."

Dr. Barsdale[3] finds that "the rapid increase of the disease of insanity among the colored people of Virginia" demands early provision for their care, the receiving capacity of the asylum over which he presides now being taxed to the utmost. There remained, at the end of last year, 234; applicants during the year, 67; admitted, 22; average number for the year, 249. Diversion and employment are considered the chief means of benefit.

Dr. Macdonald[4] still complains, as he did in his last report, of the overcrowded condition of the Asylum under his charge, there being "561 patients in a building of an estimated capacity for but 434." Better arrangement of rooms is also called for, as essential to proper provision for all classes of patients. "It would be hard to find a building less fitted to its purpose, both in design and construction, than the present."

Dr. Parsons[5] sets forth the comparative advantages of the *Pavilion System* for the care of the insane. The buildings are less expensive, the wards more easily ventilated, more home-like, and the patients more easily supervised. The disadvantages are—where ground space is an object—more space is required; increased labor and expense in heating; more liable to take fire; require the multiplication of kitchens and cooks—unless some plan be devised for a central kitchen; more travel for the medical staff—but this, on the whole, may be regarded as rather beneficial than otherwise, as it is in good part in the open air.

Whether such structures, as adjuncts to ordinary asylums, would be advantages or not, depends upon circumstances peculiar to each separate institution. At this asylum they have been found to be economical and satisfactory. Two new ones have been recently completed and occupied, and three others are in an advanced stage of progress. (Completed and occupied since the time of making report.—ED.) The main hall of each of the pavilion structures is 160 feet in length by 28 in width, the ceilings—aslant from coping to ridge—eleven feet six inches to thirteen feet four inches. "The estimated capacity of each pavilion is for sixty patients" (*less than* 1,000 *cubic feet of air space for each patient*), "but several of them now actually contain over eighty patients each." . . . "The filling in of the marshy ground has been pushed forward with extraordinary vigor during the past year, until now little remains to be done save the completion of the roads, the making of lawns and the planting of trees." The Superintendent omits to add in *this* report that the "*filling*" used is street and

[1] *Treatment of the Insane*, by Dr. Nathan Allen, of Lowell, Mass., read at meeting of American Social Science Association, 1876.

[2] *Report of Medical Superintendent*, C. F. McDonald, M. D., State Asylum for Insane Criminals, Auburn, New York, 1876.

[3] *Report of Board of Directors and Medical Superintendent* (Randolph Barsdale, M.D.) of Central Lunatic Asylum for Colored Insane, Va., 1875 and 1876.

[4] *Report of Medical Superintendent*, A. E. Macdonald, M.D., New York City Asylum for the Insane for Males, Ward's Island, for 1875.

[5] *Report of Medical Superintendent* of New York City Asylum for Females, R. L. Parsons, M.D., Blackwell's Island, for 1875.

house garbage from the city, as hitherto, in this case added to mud and quicksand, saturated to the very surface with the commingled flow of tidal and surface waters. *Flat upon this vile compost of street garbage and brackish mud most of the pavilions are erected. The floors of some of those which have been longest built are warped and bent in conformity with the irregularities of the underlying filthy surface.* But in justice to Dr. Parsons, it should be remarked that he protested, as did also the builder, against this scarcely less evident display of the want of intelligence on the part of those who so ordered these structures, than is to be found among the least intelligent of those for whom they were provided.

The public is already familiar with the recent fatal results to the inmates of one of these pavilions, which, at the time of this writing, is undergoing "repairs." By *direction of the Commissioners of Charities and Correction*, workmen are now engaged in the absurd effort to render the floor of the said building impervious by filling the spaces between the floor timbers with common lime mortar, kept in place for the time of its laying by an under-flooring made of old pine boards, separating it from the mud. The deficiencies and imperfections of the warming appliances, plumbing and sewerage show a like want of comprehension or criminal negligence of the very first necessities of hospital structures, on the part of whoever is responsible for the deadly conditions which here exist.

The total mortality in the asylum for the year 1875 was 98: 24 died of consumption, 9 of diarrhœal diseases, 7 only of *paresis*, and of other diseases from ı ω ·l—a fitting complement of the abominably unsanitary conditions.

Improvements urged by the Superintendent: *room;* adaptation of structures to the uses for which they are designed, and one especially for the care of excited patients; more attendants; more assistant physicians, and *better pay for the medical staff.* By a comparison of the salaries with other institutions, the New York City Lunatic Asylum stands at the foot of the list: State Lunatic Hospital of Pennsylvania, $6,200; Longview Asylum, Cincinnati, $5,700; Northampton Ayslum, $4,000; Flatbush Asylum, $3,800; *New York City Lunatic Asylum*, $2,000.

"It is estimated that in the city of New York *one person in four hundred is insane.* . . . . A careful examination into the cases of 412 patients, the number admitted into the Asylum for the year, reveals the fact that *only seventy-four* belong to the pauper class. . .

"On the very moderate hypothesis that each family is connected by relationship, or some other intimate tie, with three other families, it follows that one citizen in every twenty-five, on an average, has a warm personal interest in the welfare of some one who is insane, and this at any given moment of time. If the whole period of life be taken into account, it is probable that there are few of our citizens who do not at some time have a personal interest in some person who becomes insane.

"Another argument in favor of generous provision for the care and cure of the insane is the fact that with such provision more cures are effected. The patient who has been cured ceases to be a public burden, and, on the other hand, becomes an aid in bearing the burden.

"It follows, then, not only that motives of benevolence, but also the lower motive of self-interest, should impel the citizens of New York to make adequate provisions for the care and treatment of their insane; such provision as will best promote the recovery of those who are curable, and the humane care of those who are not."

Dr. Bodine[6] sketches the history of the treatment of the insane under severe mechanical restraint, and shows its disadvantages as compared with the growing modern practice without mechanical restraint, which he urges as the only rational and the most successful treatment.

The Bureau of Medicine and Sur-

[6] *Management of the Insane* without Mechanical Restraints, read before "Conference of Charities," American Social Science Meeting, 1876, by J. L. Bodine, M.D., of Trenton, N. J.

gery.—Publications of the Navy Department are strikingly modest in comparison with those of the corresponding Bureau of the War Department; but they are none the less valuable, on account of their compact form and concise diction. Not the least important of these publications, and certainly one of the most entertaining and instructive, is the latest, the report of Medical Inspector Dean,[1] of the United States Navy, on the Naval Medical Schools of France and England, which he visited under the instructions of the Surgeon-General and Secretary of the Navy. Through all her changes of government—royal, republican and imperial—France has preserved her three national medical schools at Brest, Rochefort and Toulon, for the education of medical officers of the navy. The medical school at Netley, for the special instruction of medical officers of the British and Indian services, is one of the most cherished of the national institutions of that country; its faculty embracing such renowned names as Longmere, Maclean, Parkes, Aitken, De Chaument and Macdonald. The medical officers of our Navy have, for many years, been urging the establishment of a similar school for the special education of their younger members, in such branches, particularly, as Naval and Military Hygiene. Dr. Dean's work satisfactorily demonstrates the immense advantage such a school would be to the Navy of the United States, and with him we agree "that the absence of any such place of special instruction for the service is a defect that cannot be remedied too soon."

Health Resorts of Europe and Africa, by Dr. Maddin, of Dublin,[2] is a timely and seasonable work for all who contemplate a foreign tour for health. Rarely have we encountered a book containing so much useful information for both invalids and pleasure-seekers. As a comprehensive guide-book on the advantages and disadvantages of resorts—local conditions and climates, and of mineral waters—adapted to the different conditions and ailments of those who seek them, it is the best work hitherto published. A work of extensive observation and professional experience; and not, as most guide-books are, partial descriptions, in the interest of certain special or favorite places.

It gives the benefits of the change of climate in the treatment of consumption in particular, and various chronic diseases; and points out the climates and places most suitable for those who require change for other ailments. Of mineral waters in general, and of the different qualities requiring discrimination on the part of those who would use them, it is particularly comprehensive, and alike useful to both physician and layman.

Bergman vs. "Dr." Volker[1] is the subject of an animated *Reply*, by Dr. Charles C. F. Gay, of Buffalo, to the "published medical testimony in the 'Suit for Malpractice involving the Surgery of the Hip-joint, condensed from the notes of the Superior Court Stenographer;' with editorial remarks." The case was an injury of the hip of a man sixty-one years old, of nine months' standing, which, after passing through the hands of "Dr." Volker, Dr. J. F. Miner and Dr. Hineman, without benefit, finally, through Dr. Loomis, was placed under the care of Dr. Gay. There was, at the time, excessive œdema of both lower limbs, which were also covered with scaly sores. The left leg of the patient was found to be two inches shorter than the right, with the toes inverted and lying over on the dorsum of the right foot, in the position described by Sir Astley Cooper, Hamilton and Malgaigne as indicative of dislocation of the head of the femur upon the dorsum of the ilium. The patient was put under chloroform, and exam-

[1] Reported to the Bureau of Medicine and Surgery. Washington: Government Print, 1876.

[2] The Principal Health Resorts of Europe and Africa, for the treatment of Chronic Diseases, by Thomas More Maddin, M.D., M.R.I.A., etc., etc. 8vo, pp. 276. Philadelphia: Lindsay & Blakiston

[1] "Suit for Malpractice involving the Surgery of the Hip-joint," from advance sheets of Buffalo Medical and Surgical Journal. Nov., 1876.

ined by Dr. Burwell, Hauenstein, Hopkins, Diehl and Bartow, all of whom recognized the above-mentioned symptoms, and proceeded to assist Dr. Gay in breaking up the adhesions and reducing the dislocation. Dr. Gay remarks: "I felt the bone slip into the acetabulum, as I supposed. All signs of dislocation now disappeared. . . . At the end of seventeen days the dressings were removed, and the man was allowed to go about with the aid of crutches. His pains had vanished, and the œdema, the ulcers and scales rapidly disappeared from his legs." Four and a half months subsequently, a commission of experts, consisting of Drs. Moore, White, Miner and Rochester, testified to *two inches* shortening of the limb, and moreover, that "there was no dislocation, but, on the contrary, an *impacted intracapsular fracture*, which, at an early date before separation of the impacted fragments and shortening took place, might have been easily overlooked; and that the treatment adopted by the defendant, in a man of Bergman's age, viz.: rest in bed and liniments, was as good as any." Such is the issue.

Dr. Gay insists upon his diagnosis of dislocation upon the dorsum of the ilium, and in having promptly reduced it, "if not into the acetabulum, into the ischiatic notch, where the joint seems almost as perfect as before the injury," which accounts for the shortening, a condition which, he alleges, the commission of experts neglected to investigate.

State Society Transactions.—We wish it were possible, and consistent with the scope of THE SANITARIAN, to notice as they deserved to be noticed, the contents of the various State Society Transactions which now lie before us. We can do little more than mention the papers on sanitary subjects, with regret that so many good practical papers here lie buried—published, in a majority of cases, in editions of a few hundred only, for the members of the Society before which they were read—instead of having been contributed to the medical journals, and circulated for the benefit of the profession at large. In the Colorado Transactions, Dr. THOS. E. MASSEY[1] gives a brief report on Climatology well worthy the attention of persons in search of relief from other diseases than consumption. "The wrinkled skin of middle-aged men, and the tallow faces of youngish maids and matrons, are most significant that the *drying process* of this elevated region is promotive of neither longevity nor beauty. . . . If consumptives, asthmatics and miasmatics flourish and apparently get a longer lease of life, that fact admitted does not prove that those of healthy genesis and tendencies would not live longer and enjoy life more among the soft breezes, the oysters and canvas-back ducks of the Chesapeake."

In Iowa, Dr. P. J. FARNSWORTH[2] discusses the relation of the State to Sanitary Science, and urges the necessity of proper sanitary supervision under statute law. He illustrates the benefit of such measures by a sketch of the progress of hygiene in general, and cites several examples of the effectual practical working of sanitary administration in other States.

Dr. S. M. WHIPPLE, President of the New Hampshire Society,[3] invites particular attention to Medical Jurisprudence, as a progressive field of labor for new aspirants to professional honors. Dr. J. R. HAIN, after a fruitless effort to gain information sufficient to make a report on Registration—only 35 per cent. of the physicians to whom he addressed a circular on the subject having responded—concludes a brief statement with the query: "Is it not time that this Society, by whose solicitation the law was enacted, . . . should reaffirm its conviction of the great importance of the law, and demand its fulfillment of its Fellows?" Dr. F. W. GRAVES laments an equally

[1] Transactions of the **Colorado** Territorial Medical Society, third and fourth annual sessions, 1874, 1875 and 1876.

Of the Medical Society of the **District of Columbia**, December, 1876.

[2] **Iowa** State Medical Society, 1873 to 1876 inclusive.

[3] **New Hampshire** Medical Society, Eighty-sixth Anniversary, 1876.

fruitless effort to obtain "Statistical Information," in regard to topography; indeed, *preventive* medicine, in New Hampshire, excepting that "vaccination is generally resorted to as a preventive of variola," is without a following.

The Ohio Transactions[4] contain a report by Dr. W. B. Davis on *Human Vaccine, Vaccino-Syphilis and Animal Vaccine*, well worthy of extensive circulation, verifying the conclusions of many of the most extensive observers on the continued potency of humanized vaccine, the irregularities of action and the difficulties of procuring animal vaccine.

The public health papers of the Pennsylvania Society[5] contains an *Address on Hygiene* by Dr. Benjamin Lee, summarizing the local conditions in conflict with health, as submitted by the several County Society Reports, under the practical working of the parent Society. Water supply is particularly dwelt upon as a fruitful source of disease, and increased attention to it urged by numerous citations. The danger of poisoned milk is incidentally connected with that of impure water; and the liability to typhoid fever especially by this means is made fully apparent. Dr. Lee concludes his address by an urgent appeal to the Society for earnest labor for the establishment of a State Board of Health. The Committee report of Philadelphia County (Dr. Lee, Chairman), contains a particularly instructive map, so tinted as to exhibit the varying mortality from typhoid fever in different districts. The entire river front of the Delaware is deeply colored, showing the result of the open sewers into it at the docks, and the influence of the tidal movements in diffusing the pollution in all directions; moreover, it should be remembered that portions of the water supply are derived from this river thus polluted.

A deeply tinted fever-line also runs across the city, from the Delaware to the Schuylkill, between Market and Spruce Streets, and extends to certain outskirts in varying shades—indicative of local causes. This admirable plan of object teaching is worthy of extensive circulation and following, as being the most likely means to arouse public notice.

The Transactions of Tennessee[6] contain an excellent report by Dr. E. M. Wight, on the necessity of a State Board of Health—pointing out not only the general prevalence of removable conditions fatal to health, but the singular injustice done the State by various public documents, which make out that Tennessee is one of the most *fatal* in the Union, in default of any authority in the State to correct such allegations. In this relation the report cites the deep blue tints of the "*Ninth Census*" *maps*, representing the prevalence of consumption on the great Cumberland Plateau, between the upper waters of the Tennessee and Cumberland rivers. "Consumption among the people who live on this table land, and are native to it, is actually an unknown disease." Surely such errors on the part of public authorities in taking the State Census, are quite enough to stir up an effort on the part of every intelligent citizen in the State for means to correct them. There are, indeed, causes of disease and death wide-spread in various parts of the State, sufficient to call for the enactment of sanitary laws for their removal; and a properly organized State Board of Health appears to us to be the only efficient means to this end, as well as the vindication of the State against official *guesses*.

In the Virginia Transactions,[7] the opening address by the President, Dr. F. D. Cunningham, lays special emphasis on the importance of the State Board of Health, and the necessity of pecuniary means for the prosecution of the objects for which it was established—and without which it is powerless. Every member of the Society is urged to the exercise of his influence on the Legislature, that every intelligent citizen may be im-

[4] Ohio Medical Society, Thirty-first Annual Session, 1876.

[5] Pennsylvania Medical Society, Twenty-seventh Annual Session, Vol. XI, Part I, 1876.

[6] Tennessee Medical Society, Forty-third Annual Meeting, 1876.

[7] Virginia Medical Society, Seventh Annual Session, Vol. II, Part I, 1876.

pressed with the importance of the economy of human life; necessary measures and means for the prevention of contagious and epidemic diseases; restrictions on the sale of poisons, and stimulants and narcotics, which fall under the same category, and the diffusion of information on hygiene. The report of the Committee on *Hygiene and Public Health*, by Dr. J. L. CABELL, is one of the best summaries of the subject hitherto made in this country. It comprehends: Foods, Uncontaminated Water, Purity of the Air, Meteorological States, Muscular Exercise, Causes of Epidemics, Typhoid Fever, Cholera, Infection of Wells, and Drainage. Nothing can better exemplify the wisdom of the Society in publishing its whole transactions in the *Virginia Medical Monthly* (for January) than this report of Professor Cabell. We sincerely trust that this example of the Medical Society of Virginia, in adopting means for the circulation of its transactions, may be followed. The volume—bound up for the members of the Society—will be all the more valuable for the satisfaction the members will have taken in having first given the fruits of their labor to the profession, instead of having confined them to the membership of the Society only.

The Medical Society of West Virginia[8] was especially honored by addresses of welcome by His Excellency the Governor of the State, and His Honor the Mayor of Wheeling. The President of the Society, Dr. J. O. Wall, in his opening address, lays special stress on State Medicine and Public Hygiene, and urges such action by the Society as will secure legislation for the establishment of a State Board of Health; and we are glad to have since learned that a bill has been introduced into the Legislature for that purpose. Dr. E. A. HILDRETH gives a brief *Summary of Important Epidemics and Endemics* during the Centennial period; and an abstract of the Meteorology of Wheeling, together with a table of mortality statistics for fifteen years; which he commends to the attention of the civil authorities, with the hope that they may thereby be led to the enactment of such sanitary laws as, in other cities, have greatly reduced the death-rate.

The Wisconsin Society Report[9] contains but one paper on preventive medicine: "*The use of Fresh Bovine Lymph in Vaccination Essential to Success*," by Dr. E. H. G. MEACHEM, in which he sides with the minority of observers against the potency of humanized lymph, and against the necessity of revaccination; but he favors universal and effectual vaccination with fresh bovine lymph, under the most careful supervision of competent physicians, as the only safeguard for its efficiency and absolute protection against small-pox.

New Exchanges Received.—*Hygieiniske Meddelelser.*—Udgivne af Dr. E. Horneman og Prof. Gædeken, Ny Række. 1ste Binds, 1ste Hefte. Kjöbenhavn, Jacob Lunds Boghandel.

Revista Sperimentale di Medicina Legale in relazione con l'antropologia e le scienze giuridiche e sociali, diretta dal Prof. Carlo Livi e redatta dai Dottari Augusto Tamburini—Cesare Trebbi. Anno. II. Fascicolo V–VI. Reggio—Emilia, Tipi di Stefano Calderini.

Rivista Clinica di Bologna, Redatta dal Prof. Cav. Ercole Galvagni, colla collaborazione dei Signori Prof. Luigi Concato, Francesco Magni ed altri. Bologna Tipi Fava e Garagnani al Progresso.

Commentario Clinico di Pisa, Publicazione mensile redatta dai Dottari Domenico—assistente alla clinica chirurgica—Carlo Fedeli—assistente alla cilinica medica—Cesare Nerazzini—assistente all' instituto di maternita—con la collaborazione di illustri medici e chirurghi. Pisa—nella Tipografia vannucchi.

El Siglo Médico, Boletin de Medécina y Gaceta Médica. Periodico de Medicina, Cirujia y Farmacia. Consagrado a las intereses morales, cientificos y profesionales de las clases médicas, Sale este Periodico á la luz todos los domingos, formando cada año untomo de mas de 830 paginas y doble numero de col-

[8] **West Virginia** Medical Society, Ninth Annual Meeting, 1876.

[9] **Wisconsin** State Medical Society, Vol. X, 1876.

umnas, con la portada e indices correspondiéntes. Directores y Propietarios, D. Matias Nieto Serrano, D. Francisco Mendez Alvaro. Redactores, D. Ramon Serret, D. Carlos Maria Cortezo, y muchos colaboradores.

Año XXIV. Madrid: Imprenta de los Sres. Rojas. Tudescos, 34, principal.

El Progreso Medico.—Revista de Medicina, cirugia Farmacia, Higiene, Medicina Legal y Ciencias Auxiliares. Cronica de clinicas sociedades y academias medicas nacionales y extranjeras. Director—Propietario, D. Juan Gonzalez de San Roman. Redactores, D. Mariano Carretero y otros asistidos por muchos Colaboradores. Madrid: Imprenta de los Señores F Garcia y D. Caravera, calle Mayor, No. 119.

Gazeta Médica da Bahia.—Publicada par una associagao de facultativos. Redactor Principal, Dr. A. Pacifico Pereira; cirurgiao adjunto do Hospital da Caridade, Auxiliares, Drs. da Silva Lima, d'Almeida Couto, Alvares dos Santos, Inspector do Sande Publica—Gerente—Dr. da Costa Chastinet. Bahia, officina litho-typografica de J. G. Tourinho.

Revista Médica de Chile.—Publicada bajo la direccion de la Sociedad Medica. Este Periodico sale a luz el 15 de cada mes en entregas de 30 a 50 pajinas, que forman un volúmen por año. Santiago de Chile, imprenta de "La Estrella de Chile" 19 J. Augustinas. Enero i Febrero, de 1877.

Revista Medico-Quirurgica.—Publicacion Quincenal, argano de las intereses médicos Argentinos. Redaccion Anónima: Se publica las dias 8 y 23 decada mes. Buenos Aires: Imprenta de Pablo E. Coni, calle Potosi, 60.

Books Received.—McClelland's Civil Malpractice; Index to New York Medical Journal, 1865-1876; Wine-Bibbers' Temperance Society; Census of Rhode Island, 1875; Smithsonian Report, 1875; Smithsonian Contributions to Knowledge; Explorations of the Aboriginal Remains of Tennessee, by Joseph Jones, M.D.; Archæological Collection of the United States National Museum, in charge of the Smithsonian Institution, by Charles Raw; Report, U. S. Marine Hospital Service, 1875; Medical Libraries of New York—An Address before the New York Academy of Medicine, by Samuel S. Purple, M.D., President; Anniversary Discourse before the New York Academy of Medicine, 1876, by William T. White, M.D.; Relations of Medicine to Modern Unbelief, a Valedictory Address to the Law Graduates' University of Louisville, March 1, 1876, by Richard O. Cowling, M.D.; United States Pharmacopœia and the American Medical Association, by H. C. Wood, M.D.; Obstetrics and Diseases of Women and Children—an Address before the American Medical Association, by Samuel C. Busey, M.D.; Report on the Influence of Climate on Pulmonary Diseases in Minnesota, by Franklin Staples, M.D.; Importance of the Uterine Ebb as a Factor in Pelvic Surgery, by Horatio R. Storer, M.D.; Report on Yellow Fever in Savannah, Ga., 1876, by Octavius A. White, M.D.; Proceedings of New York State Teachers' Association, 1876; Illuminating Oils in Michigan, by R. C. Kedzie, M.D.; Treatment of Typhoid Fever, by A. Chargé, M.D.; Annual Report of Police and Excise, Brooklyn, 1876; Argument of W. P. Prentice, Esq., Counsel to the Board of Health, for the Prosecution in the Case of The People *vs.* Daniel Schrumpf, for Adulteration of Milk; Animal Vaccination, by Frank P. Foster, M.D.; Myxoma of the Optic Nerve—Removal of the Growth with Preservation of the Eyeball, by Emil Gruening, M.D.; Wine in the different Forms of Anæmic and Atonic Gout, by M. E. Bégin; Report of Commissioners of Charities of Kings County, Year Ending July 31st, 1876; Report of Ohio State Asylum for the Education of Idiotic and Imbecile Youth, 1876; Syphilis and Chancroid, by P. H. Bailhache, M.D., Surgeon U. S. Marine Hospital Service; Annual Reports of the Boards of Health of Milwaukee, New Haven and Concord.

WILLIAM FARR, M. D., F. R. S., D. C. L.

SANITARIAN

WEEKLY MAGAZINE

WILLIAM FARR, M. D., F. R. S., D. C. L.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. JUNE, 1877. NO. 51.

VITAL STATISTICS.

By NATHAN ALLEN, M.D., LL.D.

One of the most important Acts ever passed by the Parliament of Great Britain, was that establishing the department called the "Registration of Births, Deaths and Marriages." This was in 1838, and in 1839 the first Report under it was made by Dr. Wm. Farr; Reports have been continued every year since by the same individual, till we now have the thirty-fifth in full for 1874, and a brief for 1875 and 1876. These Reports embody the most valuable collection of facts that has ever been made in this department of philosophical research. The great improvements in public health and sanitary legislation in England owe their origin to this source more than to any other; and what has contributed very essentially to their value and usefulness is the fact that the same man (Dr. Farr, remarkably fitted for the position by nature and experience) has been retained at the head of this bureau from its commencement to the present time. He has not only tabulated these returns, but accompanied them with such careful analyses, comparisons and applications as to diffuse the most valuable information. While spending some weeks in London, in 1872, calling at the Registrar-General's office we found Dr. Farr hard at work on a hot summer afternoon, still ready to entertain a stranger; and, though apparently having passed three score years and ten, a glance at his fine, portly form, his large, well-balanced head, and his healthy, expressive countenance, showed not only the adaptation of the man to the place, but that he himself had been well preserved by a practical application of sanitary laws, and that there were vital forces left for many years more of study and toil.

In all sanitary matters, we are fain to admit that the English are far in advance of the Americans. Their government in its various branches, when any important measure is desired or adopted, address themselves at once to the execution of their enactments by entrusting that execution to men of known ability and unquestioned reputation as scientists, experts or professors. And whether it be owing to the conservative nature of their government, or method of procedure, or maxims and rules of legislation and executive conduct, settled by long experience, or to other causes, the men who are so entrusted are con-

tinued year after year in their offices; and they, in their turn, by their writings and addresses, and by their personal influence, whether within or without the halls of legislation, are constantly promoting the interests of their respective departments and diffusing the knowledge they acquire. In this way improvements and reforms are more readily adopted and become permanent.

With us, however, it is different. Information, if not so slow in its diffusion, is more slow in reaching or influencing our legislative bodies, and if by chance, it gives birth to legislative acts, those acts are more liable to be changed, or the agents entrusted with their execution must be changed, before either one or the other have a fair trial. Thus the philanthropist is often discouraged by obstacles thrown in the way of improvement and reform not merely by difficulties attending legislation, but by the frequent changes of administration as well as of executive officers.

Sanitary Value of Registration Reports.—The registration of births, marriages and deaths affords valuable materials not only for personal history, but for improvement in society. So important are the mere date and place of birth and death regarded, that they constitute almost the only memorials placed upon the casket at burial, or upon the tablet which marks the spot where the body finally rests. The preservation of the precise facts connected with birth, marriage and death—continued for many years—furnish the data for establishing most important principles bearing upon health and life. Thus the average age of man at death in different countries is found, whence are deduced the tables for life insurance. Thus, too, the salubrity of different localities or regions of country, the prevalence of particular diseases in different places, the effect of different pursuits or occupations upon health and life are ascertained.

The collection of the leading items respecting birth, marriage and death—especially of the latter—constitute the first steps in sanitary improvement and legislation. Such materials furnish the data for analyses and comparisons of one nation or people with another, in respect to the great laws of health and life. The more exact and complete, and the longer continued these collections are, the greater their value and usefulness.

Such registration or collection of facts is indispensable not only as a basis to initiate sanitary reforms, but to enable Boards of Health to prosecute their work successfully. Hence it should be a primary object in every community or State to gather up these statistics carefully, and preserve them in some convenient and permanent form, where a good use can be made of them.

The first State enacting a registration law in this country was Massachusetts, in 1842—four years behind Great Britain—and its first Report was made in 1843. Its thirty-fourth Report, for 1875, has just been issued. Rhode Island was the next State to enact a registration law, which was in 1849, and its twenty-third Report—1875—is issued. Several other States have passed a similar law, and are making a good beginning in this respect.

But for various reasons we have not reaped in our country the same benefits from this source by way of sanitary improvements and legislation as the people of Great Britain. Still, the seeds are being

sown, facts are rapidly accumulating, inquiries are starting in many directions, and the time will come when *sanitary reform* will be a leading question in the United States.

An important element in *vital statistics* is the question of increase or decrease of population, and what are their causes. The matter of birth and death enters largely into the inquiry, and thus the whole subject of registration, in all its bearings, must be taken into the account. It is found that we cannot make a proper application of the facts gathered by registration, except as based upon population, and then the changes, both in number and character, of this population must be considered. For illustration: the birth-rate in one race or class of people may be much larger than in another; so there may be also a marked difference in the death-rate. Then there may be constant changes going on among a people by emigration or immigration, which must be carefully scanned before reaching reliable conclusions. Thus several distinct points are involved in the discussion.

Relative Increase of Population, American and Foreign.—Making use of the Registration and Census Reports of Massachusetts and Rhode Island, we propose to notice some changes taking place in their population, which have a most important bearing upon their vital statistics. If these changes continue in the same direction and ratio as they have in past years, they will become in process of time very significant in the social and statistical revelations likely to ensue. What, then, are the facts in the case? The Registration Report of Massachusetts for 1874 gives the whole number of births as follows: "American, 17,508; foreign, 21,807; American father and foreign mother, 2,354; foreign father and American mother, 3,354; not stated, 608." The Report for 1875 is as follows: "American, 17,314; foreign, 20,289; American father and foreign mother, 2,418; foreign father and American mother, 3,411; not stated, 564." It must be borne in mind that the terms "American and foreign" indicate here simply *birthplace* of parents, not race or descent. The second class, "foreign," are the offspring of persons born out of the United States; and the third and fourth classes—mixed—are composed almost wholly of a foreign element, though one of the parties was born here. As a matter of fact, there is but little intermixing in marriage between the purely American and foreign. If we add the number of births under the mixed class, the comparison will stand thus for 1874: American, 17,508, and foreign, 27,515; for 1875: American, 17,314, and foreign, 26,118. But the class called "American" are composed to some extent of a foreign element—that is, offspring of persons born in the United States, but whose parents were born abroad, being the second generation. In our cities especially we have many persons belonging to this class, and some of them are the heads of large families. While it is impossible to draw the exact line, it may be safe to estimate it at one-eighth or one-ninth, which, subtracted from the first class and added to the second, will make the foreign births relatively very much larger than the American.

But in order to make the comparison more complete, let us carefully note what proportion of the population the census denominates foreign-born. The whole population in Massachusetts, returned by the census of 1875, was 1,651,912; and of this number 418,904 were born

in a foreign country. Now just how many were born here, who are in the first class called American, whilst yet of foreign descent from their progenitors, we cannot tell, but the number is large; if these were subtracted from the former and added to the latter, they would constitute, we think, about one-third of the whole population of the State—that is, of foreign descent. We would not extend it back to several generations, but confine it to the present and the preceding generation.

Let us, by way of comparison and illustration, cite some facts from the Registration Report of Rhode Island. Next to Massachusetts in time, and in some respects with more completeness, has this State applied the law of Registration. Rhode Island has had the advantage of Massachusetts in one respect, that it has been favored with the same superintending mind at the head of its Census and Registration Reports for some twenty-five years; whereas there have been half a dozen or more individuals employed to edit the Registration Reports of Massachusetts.

Dr. E. M. Snow, perceiving many years since the importance of discriminating in vital statistics between the classification of "American and foreign" as based upon "birthplace," determined to base it upon *parentage*. Dr. S. very justly observes that "the division of population by birthplace alone must mislead and deceive," and that "such statistics are defective and deceptive." Thus the Registration Reports under Dr. Snow have been based for twenty years not only on nativity but upon *parentage*. Let us look at some of the facts. In 1875 the State had a population of 258,239, classed by *nativity*—American, 186,609, and foreign-born, 71,630; but by *parentage*, American, 134,722, and foreign, 123,517. By this latter classification over 50,000 are taken from the American column based upon birthplace (more than one-fourth), and added to the number based on parentage.

The report of births for 1875 gives 6,508, divided as follows: American, 2,727; foreign, 2,906; mixed, 875. The birth-rate for 20 years has steadily decreased among the Americans, but increased with the foreign, so that in 1875 the foreign had 58 per cent. of the births in the State. Says Dr. Snow: "The native American population of Rhode Island, by parentage, has increased 12.89 per cent. in ten years, while the foreign population, by parentage, has increased 80.11 per cent. in the same time. If the increase of population, by parentage, should continue at the same rate in the future as in the past ten years, the population of Rhode Island in June, 1877, will be, by parentage, American, 138,195, and foreign, 143,307; and in 1885 will be, by parentage, American, 152,087, and foreign, 222,466." While this large and increasing foreign element in the population of Rhode Island will surprise many persons, it shows the great advantage in discriminating between the nativity or *birthplace* of a people and their *parentage*. If the same rule could be applied to the population of other States, its results might be equally as surprising, though the relative foreign element would not look so large. The inhabitants of Rhode Island are principally engaged in manufacturing and commercial pursuits, living in villages and cities—Providence itself containing almost two-fifths of the whole population—so that, from locality and business, the foreign element might be expected to abound.

The registration of births, marriages and deaths in Providence (now under the charge of Dr. Snow for more than twenty years) has been more fully and carefully kept than in any other city in the United States. The last report (1875) develops some curious facts. There are tables showing the number of births for twenty years according to *parentage*, the number of the child, whether first, second, third, etc., to each mother; the number of children to each mother, together with the age of the mother. Then there are tables showing the difference in births between the *nativity* and *parentage* of mothers. Thus it seems that the 8,221 married women in Providence, born in the United States, and between fifteen and forty-five years of age, had 2,532 children in the two years, 1874–'75, while the 5,919 married women of the same ages, born in foreign countries, had 2,912 children in the same time; that is, the foreign married women, 2,302 less in number than the American married women, had 380 more children. If the American married women had had in the years 1874–'75 the same percentage of children as the foreign-born women, there would have been 4,044 children of American parentage, instead of 2,532, a gain of 1,512 children. If the comparison is made between the American and Irish alone, by parentage, the former class would have had 4,249 instead of 2,532, the actual number, which would show a gain of 67 per cent. in two years. Other comparisons might be instituted, did time and space permit; but there is one table, showing the percentage of mortality between the two classes, worthy of special notice.

We have a table showing for twenty years the exact mortality between the American and foreign under five years of age, according to parentage, which teaches a most important lesson. In 1856 the percentage of the American mortality is given as 37.15, and the foreign as 54.95, under five years of age. This percentage, varying in different years, from 1856 to 1875, diminishes gradually as a whole till we come down to 1875, when for the American it is 32.06, and for the foreign it is 40.96. It shows a far greater decrease in death-rate among the foreign than the American, and that in 1875 the mortality of the foreign, according to parentage, under five years of age, was only one-fifth greater than that among the strictly American. This result is very different from the statement of some writers, who assert that if the births are very much larger among the foreign class than the American, the mortality, especially of children, is so much greater as to neutralize this increase. Besides, if the assertion was true, how happens it that the foreign class everywhere so rapidly increase in numbers?

New Census of Massachusetts.—The facts gathered from the Registration Reports of Providence, showing the great fruitfulness of the foreign over the American women, are confirmed by the new census of Massachusetts, for 1875. Special pains were taken to obtain a great variety of items respecting population, such as the relative number of births of American and foreign; the size of families; the nativities and ages of mothers; the number and age of children belonging to each nationality; the conjugal condition of women, etc. Says the compiler of the census: "The object was to ascertain the relative fecundity of women of different nationalities, and to settle, as far as Massachusetts is concerned, the question which continually

arises concerning the growth of our native population as compared with that of our foreign-born. The tables are full of instruction, but space permits us to call attention to salient points only.

"The total number of women in this State who are or have been married is 398,759, and the number who have become mothers is 309,520. Of this number 190,311, or 61+ per cent., are native-born mothers, and 119,209, or 38+ per cent., are foreign-born mothers; that is, while the proportion stands 74+ native and 25+ per cent. foreign, the mothers are 61+ per cent. native and 38+ per cent. foreign. Of the whole number—631,131—of native-born females, 190,311, or 30+ per cent., have become mothers; while of 222,825, the whole number of foreign-born females, 119,209, or 53+ per cent., have become mothers. Of the 89,239 married women in the State having no children, if the line could be drawn showing what proportion belonged to each class, there are good reasons to believe that by far the larger majority would be found in the purely American. The average number of births to native-born is given as 3.52; to foreign mothers, 4.91; Irish, 5.03; Canadian, 4.78; English, 4.40, and German, 4.23."

But all these figures from the Massachusetts census are calculated to mislead us in our comparison, inasmuch as they are based upon birthplace, and not on parentage. If all that are actually foreign in *descent*, here classed as American simply because born in the United States, could be eliminated, it would change materially these figures, diminishing the per cent. under the head American, and increasing that of the foreign. As the figures are reported in the census, they represent the fruitfulness of the American altogether too favorably, and the average number of births to this class larger than it actually is. If these figures were based upon *parentage*, as in Rhode Island, the results and comparisons between the two classes would appear very different.

Let us take another point of view—viz., the *size of the family*. The census shows the number of births to each married woman, commencing with the native-born mothers, a large number of whom have only one, two and three, while the foreign-born hold out, in a far greater proportion, having four, five, six, seven, and extending to ten or twelve and occasionally upwards. The tables reporting these facts in two columns, side by side, exhibit quite a striking contrast. But even here the native or American appear to better advantage than they should. This column embraces many mothers of foreign descent—having large families, too—who ought justly to come under the second column. This change would diminish the per cent. of the American and increase that of the foreign. In no one thing is the difference between the two classes so striking as in that of the size of the family or the number of children. It would be interesting to notice in this census the difference relatively between the two classes in the number of children under five years of age, or from five to fifteen years of age, or the great increase of children in cities and large places where the foreign population abounds—and then, on the other hand, the diminution, or rather the want of children, in the rural districts and country towns, where the people are composed principally of pure Americans. There are many other facts and

points of view suggested by the Census and Registration Reports, the discussion of which might prove interesting, and throw light upon the relations between different classes as well as upon the subject of vital statistics generally. But our more immediate object is to notice the changes in population, as far as the real facts can be ascertained, and then inquire as to *the causes*—What are they? Can they be discovered?

Theory of Malthus on Population.—About one hundred years ago there arose and was continued for many years in Great Britain, an earnest discussion respecting the rights and improvement of man, together with the increase and changes in population. One of the most celebrated men engaged in this discussion was T. R. Malthus, who, after taking a critical survey of the history, progress and changes of the various tribes and nations of the world, selected the North American Colonies of the United States of America as the most suitable people upon which to base certain propositions. Among these Colonies or States, it was thought, there had been for a hundred years or more the fewest changes, such as wars, famines, revolutions of government, intermixture of races, etc., to interfere with the *natural increase* of a people. It was found upon careful inquiry that these States upon an average had doubled their number, from this source, every twenty-five years.

From the first settlement of New England the birth-rate was high, and large additions were made every year to its numbers. This continued for several generations; parish records and genealogical histories showed large families up to the commencement of the present century. But the birth-rate and the size of the family have been steadily falling off for several generations. In fact, the birth and death-rates have been approximating nearer and nearer to each other in the strictly New England stock, so that the actual increase of numbers from this source, in many localities, is comparatively small. If the theories of Malthus on Population, instead of being based upon the birth-rate in the earlier history of New England, were applied to the present or last generation, it would make a wonderful difference; in fact, they would find no support.

A brief notice of Malthus' theory may perhaps be not out of place. His leading principle was "that population, when unchecked, increases in a geometrical ratio, while subsistence increases only in an arithmetical ratio." He held that "population is necessarily limited by the means of subsistence, and invariably increases, unless prevented by some very powerful and obvious checks." These checks he divides into the positive and preventive. The former "include every cause, whether arising from vice or misery, which in any degree contributes to shorten the natural duration of human life;" and the preventive checks "include abstinence from marriage and sexual intercourse from considerations of prudence, and all vice and immorality tending to render women unprolific." The general problem laid down making the increase of population dependent upon certain increase of subsistence has by no means been confirmed by history; and as to the body being an efficient agent, this view is almost wholly ignored by Malthus. It is doubtful whether any theories in the whole domain of science or history, so complicated in their

sources and far-reaching in their applications, ever had such power and influence as those of Malthus on population. But these theories are passing away. The discoveries of modern science and the returns of census and registration reports are proving, that the true laws of population are based upon *physical organization*. Food, climate, government, and other external agents, constitute only *factors* in this great problem. The laws that propagate and perpetuate life, that support and develop the various organs of a living body, must have their origin and foundation in that organization. Some one may inquire, What has this to do with "vital statistics," or with the changes going on in the New England population? We answer, much.

Law of Population based on Physical Organization.—The laws of propagation and inheritance lie at the very foundation of all vital statistics. The birth-rate and the death-rate depend much upon the perfection of structure and harmony of function in all the organs of the human body. If there are causes operating from an internal or an external source to modify or change the action of these laws, it is of the highest importance to understand not only what these laws are, but also by what causes they are or may be modified, defeated or deflected.

Thus, in comparing the fertility of the different races living side by side, and surrounded by the same conditions of climate, food, government, etc., what makes the difference in birth-rate? Why should the birth-rate of New Englanders fall off so much in the course of a hundred years? Why should it now be only about one-half that of the Irish, the English, the German, the Canadian French? The facts presented in the Census and Registration Reports, demonstrate beyond controversy that there is about or near that difference. It should be borne in mind that this comparison is based not upon population as a whole, where the conditions may be unequal—that is, the American having a disproportionate number of aged and single persons, while the foreign is composed largely of persons from fifteen to forty-five years of age—but the comparison is made upon strictly the married women of both classes, not for one or two years, but for a series of years; not upon one or two families, but upon a large number of families. The comparison is based upon people living not in cities or towns alone, but upon all classes of married women living scattered in both cities and towns. It would seem as though no fairer or more correct analyses and comparisons could be instituted.

What are the facts in this matter of relative birth-rate? From the Registration Report of Massachusetts it is given for twenty-seven years as follows: Taking the five years' average from 1849–'53, the American was 63.02, and in 1874–'75 it was 39.38. Foreign for the same years, 1849–'53, 35.96, and 1874–'75, 47.61. Mixed, 1849–'53, 1.02, and 1874–'75, 13.02. The rate here given is by *nativity* or *birthplace*; but during this period of twenty-seven years there has been a large increase of the foreign element in the population. An examination of the above figures shows a decrease in the American for these twenty-seven years of 23.64 per cent., and an increase in the foreign of 11.65, together with an increase of the mixed, which is mostly for-

eign, of 12.02. If the foreign element could be eliminated from the American and added to the foreign, it would show the birth-rate in this class full twice as large as the strictly American, which in the mean time must have declined considerably.

A careful analysis and comparison of the Registration Reports of Massachusetts for 1874–'75 confirms these facts. So do the Census and Registration Reports of Rhode Island. No national or State census, except in Rhode Island, has ever given the facts relating to the population according to *parentage*, until the national census of 1870; and no city but Providence, we believe, has given in its Registration Reports the births and deaths on the ground of parentage. This is the only correct principle in vital statistics by which the birth-rate and death-rate of one class or race of people can properly be compared, one with another. Unless such a broad line of demarkation is drawn between different classes or nationalities, such statistics, in the language of Dr. Snow, "are defective and deceptive," and liable to "mislead and deceive." To some extent this is the case with the Massachusetts Reports. But the attempt, unfortunately, if not unwisely, is made in the last two Registration Reports of Massachusetts, to smooth over this whole subject—stating that inasmuch as the foreign element is constantly increasing, the question of *nativity* will soon be lost sight of, and is not of much account; that, for various reasons, no comparisons can properly be made between the fecundity of the two classes, American and foreign, and that if the latter should prevail, it does not imply necessarily any degeneracy in the former. The view here presented is very taking and plausible; a different or an opposite view is not pleasant, but distasteful, mortifying to personal and national pride; not quite so acceptable to journals and documents that court public favor. But such reasons should never be allowed to stand in the way of scientific inquiries.

In this steadily-declining birth-rate for a hundred years or more in our New England people, in the present marked differences of fecundity between the American and foreign, and the striking changes taking place in our population, some important questions are involved. These changes do not come by accident or chance, but must have causes—causes adequate and substantial, though radical and becoming somewhat permanent. Instead of being satisfied with this abnormal state of things, let us address ourselves earnestly to finding out these causes, inquiring what laws in vital statistics have been observed and what violated.

The causes usually assigned for decline in birth-rate and decrease in population, such as want of food and employment, bad climate, disturbances in government, wars, epidemics, earthquakes, etc., have not occurred, and therefore cannot be here applied. The causes, upon a superficial survey, are not apparent, are not easily found—but still there must be *causes*. We venture to express the opinion, that these causes arise mainly from certain changes and differences in physical organization; that there is a normal standard of physiology, which establishes a general law of propagation, and that deviations from this standard affect not only the conditions, but what are considered the laws of life and health; and, if these deviations are marked in certain directions, they affect the birth-rate, and, of course, the increase

of population. This standard has its basis in the highest or most perfect developments of the body as it regards its anatomy and physiology; or, in other words, it is based upon a *physical system evenly developed* in every part or organ, so that each can perform its respective functions in harmony with all the rest. While food, climate, employment and other external agents may have great influence in modifying or changing the operation of this law, they are factors or secondary agents; the law which perpetuates life and moulds its development has its origin and foundation in the body itself. It is a law which extends throughout the whole animal and vegetable kingdom, and abundant evidences by way of proof and illustration can be adduced from a great variety of sources: but this is not the time or place for such a discussion.

Changes of Organization.—In connection with this declining birth-rate in New England, there has been, we believe, a gradual change in physical organization; in the first place in case of males in giving up manual labor, physical exercise and outdoor work generally, for lighter employments in the shop, the store and business that taxes the brain far more than other parts of the body; then in case of females giving up house-work and employments which make a severe demand upon the muscles, in giving more attention to mental pursuits, to the fashions of the day, to the artificial habits of society, and what may be called the luxuries of modern civilization. These and other causes, commencing in early life, have served to impair not only the strength or stamina of the constitution, but to change the *harmony or balance of organization;* that is, instead of having a good development of the muscular and lymphatic temperament, we have a great predominance of *nerve tissue,* so that the constant demands of the brain are far greater than the physical system, as a whole, can bear. The strength and functions of various organs in the body become changed—some stronger, others weaker, and the whole more dependent upon the nervous system, and that, too, at times, in a capricious or morbid state.

These physical changes, extending to the brain, involve certain changes of character, and have an important bearing on domestic life. The marriage relation comes to be regarded too much as a matter of convenience and self-interest; the standard of living is too high; the artificial wants are too many; confinement to household duties is irksome; children are a burden; the responsibilities of maternity must be avoided or limited. Hence in married life a series of "nameless acts" take place, which need not be described, but injure seriously the health. And when females become mothers one or two births seem not unfrequently either to break down the constitution, or bring on weaknesses and complaints from which the individual seldom recovers. Once women would go through this process a half dozen times or more with improved health and constitution; but now such cases are rare. In this matter of offspring and large families, there is a wide departure or difference in the present state of society from that which once existed in New England. There is another marked difference which shows a change of organization. It is the testimony of physicians that not more than half (and some estimate it higher) of American women can now properly nurse their offspring.

It is frequently a matter of necessity, and not choice, arising from deficient development of the mammary glands and the want of vigorous and healthy digestive organs. Formerly New England women had comparatively but little trouble in this direction.

Again, uterine diseases and complaints have greatly multiplied. With the loss of muscular power, and long-continued pressure upon the organs in the lower part of the pelvis, the reproductive organs become displaced and weakened if not diseased to such an extent that they are incapacitated for performing healthy functions. From these and other causes there is no doubt but that the birth-rate with New England women has been sensibly affected. If we examine the organization of the Irish, the English, the German and the Canadian women, and test it by the normal standard of physiology, we shall find that these women, in all the leading organs of the body, approximate to that standard more nearly than the American women, and that as a whole they are comparatively free from the defects pointed out above. If there was only here and there one with this imperfect, ill-balanced and defective organization, the effects upon birth-rate would not be noticed; but when a large majority in the community are found thus organized, its effects become at once obvious. On the other hand, wherever we find a married woman having, as it were, a perfect and well-balanced organization, with other conditions favorable, we shall find a goodly number of children, promising well, too, for the future.

Wherever there is a high birth-rate or a rapid increase of population, among whatever people, race or nation, we are sure to find healthy women, with well-balanced constitutions, and *vice versa*. Though the remarks here made upon organization apply more particularly to women, still there is a normal standard of physiology for men, who are very far from reaching it, and among the Americans almost as many deficiencies may be found as among women. It should be borne in mind that in the transmission of the physical system, the organization of woman is more important than that of man, especially as the former, in the matter of gestation and nursing, has the sole agency for the time being in developing and moulding the body of the offspring. At the same time, good and bad qualities from either parent may be transmitted in an intensified form.

That the low birth-rate of Massachusetts may be better understood, let us see how it stands, and compare it with other nations: According to the Registration Reports, it averaged, from 1850 to 1860, 1 in 33; from 1860 to 1865 (war times), 1 in 39; from 1865 to 1870, 1 in 36; and from 1870 to 1875, 1 in 37—fractions in each case omitted. As this birth-rate is given for the whole population of the State, composed of about one-third foreign, having relatively a much larger birth-rate, that of the American alone must be considerably below 37—probably below 1 in 40. The birth-rate of France, which is the lowest of any European nation, is 1 in 37. The increase of population here is very small. According to the latest Reports at hand, the birth-rate of other nations, omitting fractions, is as follows: Austria, 25; Prussia, 25; Netherlands, 27; Denmark, 32; Sweden, 32; Norway, 31; Saxony, 25; Bavaria, 29; Sardinia, 27; and in England and Wales, 1876, 1 in 28. The birth-rate in Great Britain has been constantly increasing for years. Connected with this low birth-rate,

the question has been raised whether it did not indicate some physical degeneracy. The point has been controverted by numerous writers, and from a variety of sources. The time, perhaps, has not come for a scientific or thorough discussion of this whole subject. Besides, persons having comparatively no knowledge of physiology, and without considering the importance or the effects of changes in physical organization, cannot form correct judgments upon such a question. Medical men of long experience and extended observation among the people described above are the best judges, and we doubt whether any one from this class will call in question the facts or inferences here stated. It is in some respects a new field of research, and it may be that new and important truths or principles are yet to be developed by the inquiry.

In the investigation of such questions as those which have now engaged our attention, something more is involved than the gratification of an idle curiosity or the support of a favorite theory. Thoughtful minds are inquiring what is the cause of these changes and what do they portend? What laws in vital statistics have been observed and what violated? What lessons do they teach in respect to increase or decrease of population? May there not be some new problems to be solved, some new principles in science to be evolved? Time and farther researches will determine. For wherever and whenever a civilized and enlightened people fail to obtain a proper increase in numbers from generation to generation, it shows something wrong and unhealthy in their domestic relations, something defective in the type of their civilization and Christianity, some violation of the great laws of health, life and human increase.

Comparative Mortality Statistics.—Paris and New York. The *Journal d'Hygiène* makes the following comparisons:

In 1875 Paris contained 1,851,792 inhabitants. The deaths were 45,544, or 24 per 1,000; of these, 8,010, or 17½ per cent. of deaths were from consumption, and 13,280, or 2.9 per cent., from diphtheria.

In New York the population was estimated to be 1,069,370, with 30,709 deaths; of which 4,192, or 13¾ per cent. of the whole number, were from consumption, and 3,062, or 7.9 per cent., from diphtheria. Of the deaths in New York, 10,908 were from the so-called zymotic diseases, of which diphtheritic affections formed 28 per cent.

Military Surgeons.—Prussia has 1,299 for 311,423 men, or one to every 240; Bavaria, 203 for 48,244 men, or one to every 240; Saxony, 96 for 24,208 men, or one to every 250; Wurtemberg, 75 for 17,784 men, or one to every 237; Germany, 1,673 for 401,659 men, or one to every 240; France, 1,166 for 467,636 men, or one to every 401. By these figures it appears that in Prussia and France together, 4,512 doctors are required for the proper care of 1,222,954 men, and that from these two countries alone, more than a million and a quarter of men in the vigor of youth and manhood are withdrawn from productive occupations and made the subjects of government support by taxes imposed upon the remaining portion of the community. The cost of the Prussian army is $93,811,737; of the French, $108,374,307.

WILLIAM FARR, M.D., F.R.S., D.C.L.

It is with great pleasure that we present to our readers this month the portrait of the distinguished statistician, Dr. William Farr, Superintendent of the Statistical Department of the Registrar-General's office, Somerset House, London. Dr. Farr was born at Kenley, Shropshire, England, in 1807. He received his early education at Dorrington and Shrewsbury, and soon thereafter entered upon a university course in Paris, which he concluded in the University of London, 1831. He soon after entered upon the duties of House Surgeon of Shrewsbury Infirmary, which he discharged for six months. In 1832 he commenced the practice and teaching of medicine in London, and subsequently edited the *Medical Annual*, and the *British Annals of Medicine*. At an early age he is said to have shown a strong taste for statistical inquiry and the systematizing of figures, and the facility with which he exercised this taste in his editorial work, led to his appointment as Compiler of Abstracts in the Registrar-General's office in 1838, where he organized the Statistical Department over which he continues to preside.

He reported in detail on the cholera epidemic of 1849; has framed a new Statistical Nosology, and constructed the English Life Table, with Values of Annuities and Premiums for Single and Joint Lives. He assisted the Registrar-General in taking the census in 1851, 1861 and 1871. Was a member of the Royal Commission for Inquiry into the Sanitary Condition of the Army in India, in 1859, and in the same year read a paper before the Royal Society, describing the "Method of Constructing Life Tables, and the application of Scheutz's calculating machine to that purpose." He has been delegated by the Government to attend the International Statistical Congresses which have been held at various times in the chief capitals of Europe. Meanwhile he has contributed many articles to medical journals; the article on "Vital Statistics," in McCulloch's Statistics of the British Empire; presented valuable papers on the "Finance of Life Insurance"; the "Income Tax"; the "Valuation of Railways"; "Valuation of Railways, Telegraphs, Water Companies, Canals and other Commercial Concerns, with Prospective, Deferred, Increasing, Decreasing or Terminary Profits" (1876); has presented many papers to, and taken part in, the discussions of the most important statistical inquiries of the Statistical Society of London, of which Society, in 1871-2, he was President. And from 1837 to 1876 he has made the important Annual Reports on the Public Health and the Causes of Death in England, with such perspicuity as to give him a world-wide reputation, and, by general consent, the foremost place in his particular field of labor. But, as will readily be perceived by the foregoing enumeration of his chief papers, his studies and reports extend far

beyond his official duties, and have long since distinguished him as one of the ablest of contributors to the exact applications of statistical knowledge in Social Science and Political Economy.

Concerning the experience of English railway travel, he shows that the life-risk of railway travelers, when calculated upon the basis of the largest experience, has given a yearly death-rate of only about .0021 per cent., or 21 in 10,000 persons constantly in movement upon railroad carriages for the entire year. This is a little less than the mean death-rate of people in their own dwellings.

Dr. Farr's report upon Coinage and Metric Weights and Measures, in 1869, at the Statistical Congress at the Hague, was one of his most masterly productions, and his recommendations for an international system of metric coinage gave to the world a triumphant argument, upon which that great reform is being gradually brought about.

His report upon the death-rates in the "Healthy Districts" of England, and the construction of Life Tables based thereon, as presented to the British Association in 1859, contributed largely to a statistical basis of sanitary experience and medical history in connection with the topography of salubrious districts. His Decennial Reviews of the British census, and the experience of the office of the Registrar-General, with its great practical lessons of biology and hygiene, are among the treasures of the sanitary and statistical literature which have most enriched the fields of physiological research. In the last review, which was based upon the experience of the last decenniad, and the last two and a half decenniads, some of the most eloquent passages are found which have anywhere been written in the literature of physiology, hygiene or national history. How the English people live, how they die, and by what means the chances of life have been gradually improved, are set forth with almost unexampled cogency. By his masterly logic and statistical demonstration, the fallacies of Malthus, Pepys, Price—the whole Malthusian deception of bad arithmetic and worse logic—have been swept away. He concludes that part of his argument which applies to those fallacies with the remark that "The great source of the misery of mankind is not their numbers, but their imperfections, and the want of control over the conditions in which they live."

There is a classical grace and opulence coupled with remarkable terseness in all Dr. Farr's writings. For example: in his Decennial Review of the Records of Mortality in England, he closes an argument in favor of economy in funerals with: "What the good men do is their eternal monument, and its survival their highest reward; service to the living is true devotion to the dead."

. . . "The national returns of cases and causes of death will be an arsenal which the genius of English healers cannot fail to turn to account; . . . death returns are the basis of all sanitary statistics. . . The hygienic problem is how to free the . . people from hereditary disease: hereditary consumption, cancer, syphilis, gout, hereditary insanity, hereditary vagrancy, hereditary criminality; and to develop in the mass the athletic, intellectual, æsthetic, moral and religious qualities which have already distinguished some of the breed."

WATER SUPPLY OF CITIES. *

By J. M. Toner, M.D.

The able discussions during the meetings of this Association, as well as the attention now being given by eminent engineers to the problem of how best to supply pure water in sufficient quantity to large cities, fully evince the great importance of the subject. The question is by no means a simple one. Some of our large American cities, though still in their infancy, have brought into requisition nearly all the available unpolluted streams near them, and yet find the supply too meagre for their wants. The steady and rapid growth of our cities makes an increase of the water supply a necessity every few years. The geographical position and the topographical character of the country surrounding some of our cities, seem to impose a limit to the supply of pure water, or at least render any system that will materially increase the supply very expensive. The question, too, is often embarrassed by the defilement of streams and the mercenary spirit of mill operatives and owners of water privileges. Indeed, dwellers along the streams rarely exercise any care to prevent nuisances from being thrown into them. Science fully recognizes the fact that impure water is a fruitful source of disease; and common decency requires sanitarians and State authorities to protect the people from such evident causes of danger. Legislation is urgently needed to prevent the defilement of all streams, but more especially of those that furnish water for domestic use to cities and towns. It is a fact of public notoriety that scarcely one of our cities has an adequate supply of water, and all of them are obliged to exercise caution in order to limit its use and prevent waste. What, then, must be their condition in ten or twenty years hence? Common prudence, I think, should suggest to cities to increase their pure water supply where it is possible, and to commence timely the construction of the necessary works. This would be a wiser course than the too stringently limiting the use of water, which is never entirely wasted, even if it perform no other work than the washing out of a sewer. The water supply and the drainage and sewerage, are of greater importance to the welfare of a city than the carriageway and sidewalk. Under the most favorable conditions water-works are in their construction expensive, and require care for their preservation. This is especially true where large reservoirs are constructed to store water and permit it to settle and free itself from all fluviatile matters. Although nearly all the cities build their works on this theory, there is scarcely one where the demand for water is not so

*Read at the Meeting of the American Public Health Association, Boston October, 1876.

great as to render the reservoir little more than a receptacle, which merely distributes the water to consumers without allowing it to settle. It is well known that far the greater part of the water supplied to cities, is consumed for purposes other than potable or strictly domestic use. The various factories, trades and occupations, the flushing of sewers and water-closets, the fire plugs, street sprinklers, fountains and stables dispose of the most. A limited supply, by exciting a constant apprehension of scarcity, necessitates the curtailing of the free use of water. It is feared that this circumstance to some extent gives excuse for the detention and accumulation of refuse about dwellings and factories, and in the streets and alleys of the more crowded parts of cities. The sewer is now the great scavenger of modern cities, and when properly constructed and supplied with an abundance of water, is reliable, efficient and inoffensive. The prompt removal of all horse offal and excrementitious matter, as a sanitary measure, is of the greatest importance. These are at first scarcely offensive, but if retained but a few hours they ferment, and not only become so, but are dangerous to life. A city, or that part of a city, with but little fall for drainage, requires more water to keep the sewers free; but it should be borne in mind that the sewers, with a stream of rapidly-moving water sufficiently strong to carry with it the matters deposited therein, will be comparatively inoffensive, and generate no poisonous gases. The dangerous sewers are those with sluggish currents, no ventilation, and with an insufficient supply of water.

If these propositions be true, and I feel confident that the experience of sanitarians will confirm their verity, then it seems to be the duty of city authorities to adopt comprehensive and systematic plans for underground sewers, and to furnish abundance of water to keep them well flooded. The introduction in our country of enlarged and improved sewers and concrete asphalt pavements, renders it entirely feasible for us to keep them perfectly clean. Streets, alleys and courts properly graded and paved with non-absorbing material, and kept in good repair, are susceptible of being flushed with water as often as required. The purpose of these remarks is to call attention to the water system of our great cities, its domestic and hygienic uses, and the threatened inadequate supply in the future. Attention ought to be constantly directed to this subject, and liberal and enlightened views on sanitary science should influence its consummation. The suggestions which I wish to make for the relief of, if not an actual existing scarcity of potable water, are, to secure improved hygienic conditions to our cities, to advocate the introduction of vastly greater quantities of water, and the encouragement of its freer use than has hitherto obtained. Cities so situated as to be limited in obtaining ready supply of good potable water, I suggest, should establish duplicate systems of water supply and distribution. Water not intended for strictly domestic uses may be derived by pumping or otherwise from the most available and suitable source. This may even be a question of economy, as this duplicate supply may in some cases be obtained at a much less cost than an adequate additional supply of water fit for domestic use. For instance, the water pumped out of the harbor of New York or San Francisco would answer perfectly well for many purposes, and particularly for washing

out of the sewers. The question of cost would in a measure determine which to prefer, a preference being given to pure water. This suggestion has probably occurred to many, and has, I believe, been proposed for New York; but its expense has, and probably will for years deter many from advocating its adoption. But the urgent need of abundance of water for other than domestic use, and especially for flushing sewers, will, I am persuaded, require some such measure in order to preserve our cities in a good hygienic condition. The mind has so long looked upon the use of water only in connection with its domestic use, that it will be slow to familiarize itself with the necessities created by modern civilization, and its power to purify cities. No street ought to be without a sewer, and every tenement on it ought to have a good closet connection with it, and be supplied with abundance of water.

———o———

How to Preserve and Restore Flowers.—Flowers may be preserved in a fresh state for a considerable time by keeping them in a moist atmosphere. Those who love to see plenty of fresh flowers in their parlors or sitting-rooms will be gratified by adopting the following plan: Pour water into a flat porcelain or glass dish. Set a vase of flowers in the dish, and over it place a bell glass, with its rim in the water. The air which surrounds the flowers being confined beneath the bell glass, is kept continually moist with the water which rose with it in the form of vapor. As fast as the water is condensed it runs down the sides of the bell glass back into the dish; and if means were taken to enclose the water in the outside of the bell glass, so as to prevent its evaporating into the air of the sitting-room, the atmosphere around the flowers would remain continually damp. Those who wish to "linger on the beauty" of a rare flower or bouquet will be repaid by this experiment. It can be tried on a small scale by inverting a tumbler over a rose-bud in a saucer of water. Another method, by which some flowers may be preserved for many months, is to carefully dip them, as soon as gathered, in perfectly limpid gum water, and after allowing them to drain two or three minutes, to set them upright, or arrange them in the usual manner in an empty vase. The gum gradually forms a transparent coating on the surface of the petals and stems, and preserves their figure and color long after they have become dry and crisp. Faded flowers may be generally more or less restored by immersing them half way up their stems in very hot water, and allowing them to remain in it until it cools, or they have recovered. The cooled portion of the stems must then be cut off, and the flowers placed in clear, cold water. In this way a great number of faded flowers may be restored; but there are some of the more fugacious kinds on which it proves useless; but flowers may also be preserved and their tints deepened by adding to the water a little of the solution of carbonate of ammonia and a few drops of the phosphate of soda. The effect of this, in giving the flower a deeper color and a stronger appearance, is quite wonderful; and by cutting off every other day about one-half inch of the stems of the flowers with a sharp knife, they may be kept as long as their natural life would last.—*Lancaster Farmer.*

THE PLEA OF INSANITY.

By ALFRED L. CARROLL, M.D., President of the Richmond County Medical Society, Member of the Society of Neurology, etc., etc.

Proceedings of New York Medico-Legal Society, February 7, 1877, Hon. Geo. H. Yeaman, Vice-President, in the Chair.

It is not the purpose of this paper to attempt a definition of insanity in the abstract. Jurisconsults and physicians alike have ever failed, and ever will fail, to establish an unvarying "norm" of mental function which shall be applicable to all cases; and this for the reason that each individual problem involves the consideration of such shifting factors as congenital temperament, training, habit, and other personal circumstances; John Doe's insanity consisting in his departure from the mental state which is natural to himself, not in his difference from the mental state which is natural to Richard Roe. When the boisterous hoosier vents his untutored animal spirits in vociferous tune and saltatory "break-downs" in public places we do not doubt his sanity, for, as he himself would say, "It's the nature o' the beast;" but if an usually grave professor of philosophy were to indulge in similar outbursts, we should more than suspect him to be mad. An eminent British alienist recounts an instance in which the wearing of a white hat was the first marked indication of lunacy; not that a white hat in itself shows weakness in the head it covers, but that the wearer in question was a clergyman who had theretofore always been a great stickler in the details of his clerical costume. In brief, the nearest approach to a verbal description of insanity is to call it *a departure from the individual's natural mode of thought and action, arising from subjective change—i. e., not to be accounted for by changed external conditions;* or, to put it in the form of the algebraic formula on which the modern scientific method insists, if we represent a man's original character by *a*, his training and habit by *b*, and his present peculiarities of conduct by *c*, then, in any given case, *insanity*$=a\,b+c$.

Of course this equation does not technically exclude transient disturbances, like the delirium of fever, etc., nor will it meet all the quibbles of cross-examination; but it will suffice for the comprehension of the general reader, and is, moreover, efficient for practical working, in the vast majority of instances. So significant is the incongruity of present and past demeanor, that a recent writer on the subject even affirms that if an habitually eccentric person were all at once to become like his more sober-minded neighbors, the alteration should be regarded as portentous of impending lunacy; which seems very much like saying that if a delicate person were to cease coughing and begin to gain flesh and strength, we should suspect that consumption was about to declare itself.

The aspect of insanity most interesting to the public is that which

relates to criminal actions, especially to homicide, since it has latterly become the fashion with counsel for the defense to impress upon the juryman of the period that killing is *prima facie* evidence of mental unsoundness, and to retain medical experts as special pleaders—not to give an impartial scientific opinion, but to concoct the most ingenious case for the defendant, until many people are inclined to think that the professed "mad-doctor" looks on every one except himself as insane.

It is beyond question, however, that there are numerous phases of insanity clearly distinguishable by a professional observer, but not easily to be perceived by an unpracticed eye; and the dispute between law and medicine over these obscurer forms of mental disease arises from the fact that the legal notion of insanity remains unaltered from a past age, when nothing short of total dethronement of reason was recognized as lunacy, whilst modern medicine has learned to detect earlier stages and less-marked varieties of affections of the brain as well as of other organs. Even in the most advanced legal opinions, two characteristics insisted on as essential to insanity are, inability to distinguish right from wrong, and the existence of delusion; notwithstanding that almost every asylum affords abundant examples of lunacy—and dangerous lunacy—without delusion, and that every attendant on the insane can testify to the knowledge of right and wrong manifested by many of his most mischievous wards. The very furtiveness which marks the misdeeds of numerous persons who are indisputably mad, is in itself indicative of their consciousness of wrongdoing; the kleptomaniac, for example, does his insensate purloining with as stealthy care to avoid detection as the professional thief; he is fully aware of the distinction between *meum* and *tuum*, but his will is not strong enough to deter him from a larceny which he would be ready to reprehend if committed by another.

But even supposing that forensic doubts of diagnosis were set at rest, the question would remain, whether all these less-defined cases of lunacy ought to be excluded from the operation of criminal law; and this question would be unhesitatingly answered in the negative by a few, at all events, of the ablest alienists, who, when they certify to a patient's insanity, do not necessarily mean to imply that he is unaccountable for any and all of his actions. In other words, there is a distinction to be drawn between insane criminals and criminal lunatics; and it is quite possible that a person whose insanity would absolve him from responsibility in one direction may commit crime from a sanely criminal motive—if such a paradoxical expression be permissible. In any given case, the first question to be considered is, whether the criminal act was the direct outcome of the actor's insanity; the second, whether, if so, the person was incapable of resisting the insane prompting. The propositions thus suggested, which have been affirmed by British jurists, are resolutely opposed by Maudsley* and his followers, who, forgetting that the penal code regards not the moral sinfulness of an offense, but its injuriousness to society—punishing larceny more severely than the morally worse breach of trust—are inclined, if not to look on crime as in all in-

*"Responsibility in Mental Disease."

stances "the fruit of madness," and the necessary result of individual organization from the tyranny of which no one can escape, to insist, at least, that he who is in any respect of unsound mind, should be in all other respects exempt from legal accountability, on the ground that even in monomania "the rest of the mind is in a more or less marked state of moral or effective alienation;" that "a person does not, when he becomes insane, take leave of his human passions nor cease to be affected by ordinary motives, and when he acts from one of these motives he does not, by doing so, take leave of his insanity." But Maudsley himself is forced to admit "some measure of responsibility in some cases." In speaking of the subjects of moral insanity, he says: "All the responsibility which they are capable of feeling is that which springs from a fear of punishment. But experience shows that this apprehension does influence some of them beneficially, and that the actual infliction of punishment may do them good; that in some few instances, at any rate, it is the best treatment which can be used;" and he virtually avows the sentimental nature of his argument in saying: "Abolish capital punishment, and the dispute between lawyers and doctors ceases to be of practical importance. There can be no doubt that the insane inmates of asylums are to some extent deterred from doing wrong and stimulated to exercise self-control by the fear of what they may suffer in the way of loss of indulgence or of the infliction of a closer restraint if they yield to their violent propensities;" although, even where he imputes responsibility to a criminal, instead of sentencing him in anger to a prison, he would consign him more in sorrow than in anger to the seclusion of an asylum.

Granting that an essential condition of insanity is the predominance of certain ideational or emotional states over volitional control, it does not follow that these states influence the whole range of conduct of the individual. It is a matter of common observation that a person whose reason is inoperative in some respects, may exercise perfect will-power over his thoughts and actions in others; intellectual labor involving the closest concentration of the faculties has been done by patients incapable of resisting the most preposterous and groundless delusions; a large part of Comte's wonderful work was done while he was an incurable inmate of a *maison de santé;* nay, Maudsley goes so far as to affirm that the power of stepping out of the beaten track of thought and originating a new line of reflection is a common indication of the "insane neurosis." The self-control of lunatics may be carried still farther: "Nothing is more certain than that a monomaniac will sometimes conceal or deny his delusions, dissemble his feelings, and regulate his conduct accordingly, when he has a strong motive to do so—whether this be a lively fear of suffering or a strong hope of gain;"* and many instances are recorded in which such self-restraint has been maintained persistently for long periods of time, insane persons having successfully simulated sanity to obtain release from an asylum or to avoid being sent thither.

With the understanding that insanity, like "heart disease" or "liver disease," is a generic term, including various forms of brain disorder, let us glance at the different conditions of which homicide

*Maudsley, *op. cit.*

may be the outcome, and see what application of the foregoing remarks can be made to them.

Little consideration need be given to the acts done by idiots or demented persons out of unreasoning mischief or mere imitation. If the imbecility be evident—and in such cases there can be no doubtful diagnosis—of course legal responsibility cannot exist. But it would be well for jurymen to bear in mind that actual imbecility is meant, involving ignorance of consequences, and shown in the whole range of the individual's conduct and past history; not the mere circumstance that he is somewhat below the average in intelligence. There may be instances in which stupidity might be regarded as modifying responsibility, perhaps, but these belong rather to ethics than to medicine.

Neither can there be any question of the irresponsibility of persons who commit violence under the influence of general mania, in which all the faculties are so manifestly deranged that the least practiced observer can readily detect the craziness. Although many chronic maniacs undoubtedly "know as well as any one that what they do is wrong, and they delight in doing it because it is wrong,"* no one who has ever seen such cases would on this account subject them to legal penalties. The only difficulty likely to arise under this head is where homicide has been committed in an attack of acute mania of brief duration, from which the patient has quite recovered. Here it may not be easy to obtain an accurate account of all his symptoms at the time of the outbreak; but something more than an outburst of temper should be proven. In such cases (we are not now speaking of impulsive insanity) the maniacal state is shown by the sufferer's entire conduct, not by the isolated act of violence. Moreover, although the access of acute mania may be more sudden than that of any other form of lunacy, its approach is, in the vast majority of instances, heralded by premonitory indications of marked significance, and we shall usually hear, besides, of a "neurotic" temperament; for, though a healthy brain may be gradually deranged by prolonged and unceasing worry, a sound mind is not quickly unbalanced by present events.

But, aside from cases of acute or chronic general mania, in which incoherence of thought and perversion of reason proclaim the disease unmistakably, we may have to deal with partial mania, wherein the mind is clear in most of its operations, aberrant in but a few directions; and this it is which oftenest furnishes food for medico-legal discussions. It is beyond dispute that such a condition exists; in Maudsley's own words, "A man may be insane upon one point and sane in all other respects;" the controversy is solely whether one so partially deranged should be exempt from accountability for crime committed on the sane side of his character; and with curious logic, immediately after the statement above quoted, Maudsley maintains the doctrine of irresponsibility. The same inconsistent theory is upheld by our laws, which, whilst admitting the civil competency of a partially insane person under certain circumstances to enter into contracts or to make a will, nevertheless declare that no act done "in a state of insanity" is punishable as an offense—a declaration which is

* Blandford. "Insanity and its Treatment."

always interpreted as covering crimes having no possible relation to the criminal's partial insanity. Among the medical men who advocate this extremely lenient construction of the criminal code, the arguments advanced rest upon the very great difficulty sometimes experienced in tracing a connection which really does exist in the lunatic's mind between his delusion and his apparently inconsequent act. Much stress is laid upon the exceptions to Locke's rule, that madmen reason correctly from false premises, and examples are adduced to show that the reasoning may be as insane as the premise: as, where a monomaniac, believing himself to be Christ, did unchristian violence to attract public attention to his fancied mission. Hence it is urged that, "The right problem for a court of justice to place before a scientific witness is to trace a connection, not between the delusion and the act, which may be undetectable—or, if detectable, such as would not excuse the act if the delusion were true—but between the disease and the act."* Whilst acknowledging the general fairness of this proposition, certain particular qualifications are required to render it satisfactory. We may admit that occasionally in cases of partial mania, even where the patient seems rational on most subjects, paroxysms of uncontrollable violence may occur, during which his actions are scarcely more than automatic, and he is as irresponsible as the sufferer from delirium. In a much larger class of cases of monomania the emotions and passions are exalted and easily excited; but in these the question will arise whether the patient is legally distinguishable from a quick-tempered person, whose impulses are virtually uncontrollable in his anger, but who is nevertheless punished for yielding to them; the point at issue is practically if "heat of passion" be a valid plea for a partially insane client and invalid for a nominally sane one.

Cases wherein homicidal acts unmistakably spring from delusion are also divisible into two categories, as to whether the delusion, if true, would or would not justify the deed. If a loving parent kill his child in obedience to an imagined divine command, we cannot impute criminality to him more than to the patriarch Abraham; if a man be insanely convinced that the person whom he attacks in supposed self-defense was about to take his life, we must judge him as we would a person of sound mind under actual similar circumstances. There are, however, on the other hand, instances where hatred, revenge and other vicious motives are gratified on provocation which would be trivial, even if it were real. A monomaniac whose insanity is so partial as not to incapacitate him for ordinary business or social intercourse is possessed by the delusion that some casual acquaintance has blackened his character or supplanted him in his mistress' affections, and thereupon maliciously murders his fancied traducer or rival, or he broods over and executes mortal vengeance for a still less grievous imaginary affront, showing that he is wicked as well as insane. Whether here the insanity should cover the wickedness, is a query which medical experts show a growing inclination to answer in the negative. Hammond† says: "If I entertain the

* Maudsley, *op. citat.*

† "Insanity in its Relations to Crime."

delusion that a certain person has injured me, I may be insane; but, even if I am, I ought to be punished if I kill the individual who I imagine has done me a wrong," and he draws a broad distinction between presons who are "at the same time insane and responsible for an infraction of the law" and those "whose intellectual faculties are so perverted or destroyed as to render them absolutely unaccountable for their actions," advocating the infliction of the extreme legal penalty upon "the insane person whose delusions are not such as would, if true, justify a homicide." Harsh as this view may seem at a first glance, it becomes scarcely more than equitable when we consider how often homicides of such sort are perpetrated after evident premeditation, and followed by carefully-devised measures to avoid detection.

Outside of these categories we come to cases in which—conceding all that can be claimed as to the difficulty of following up the sequence of an insane person's ideas—the criminal act is manifestly disconnected from any delusion, and prompted by a deliberately criminal intent. Just as the "delusion of persecution" could not excuse a man for committing a forgery with willful purpose to defraud, so neither it, nor, *a fortiori*, any less combative delusion, should excuse the commission of murder out of sheer vengeance or for the sake of robbery; and yet, every year, under the absurd phrasing of our statutes, this excuse is accepted in our courts, bringing scandal upon both law and medicine, until a diagnosis of partial insanity is sought as a kind of letter of marque to permit unlimited ruffianism. As a recent writer * says: "It is well known that some lunatics are vicious as well as mad, and that these sometimes basely take advantage of their situation and exhibit cool and calculating villainy." Even among recognized lunatics in asylums, we are told "that there are many of them who, although of unsound mind, are yet regulated by rational motives, and are as capable as sane men of appreciating the nature of an illegal act, of foreseeing its consequences, and of exercising self-control. We are told that insanity may be partial, and may be confined to certain regions of the mind, leaving those who suffer from it free from durance, and of vigorous will in all the ordinary relations of life. We are told that the insane may be deterred from crime by the dread of punishment, and that they are now presuming upon the immunity from punishment which they have hitherto enjoyed, and are giving license to their evil passions—to jealousy, rage and revenge—safe in the knowledge that they are insane;" and of such it is added: "If it can be shown conclusively that a lunatic confined in an asylum, who is in possession of adequate powers of self-control, has committed a premeditated murder, instigated by some rational motive altogether independent of his particular mental aberration, there can be no good reason why that lunatic should not be treated like any ordinary criminal." This common-sense view may, of course, be met by the theoretical objection that no insane person possesses "adequate" self-command; but we find Maudsley himself admitting that "a practical experience of the insane teaches us what a power of self-control even they sometimes evince when they have a

* *British Medical Journal*, No. 766.

sufficient motive to exert it. The fear of suffering by yielding to their insane propensities suffices, in many instances, to hold them in check; the occasional concealment or actual denial of their delusions, if they have something to fear from the discovery of them or something to gain by the concealment of them, testifies to a power over themselves which sane persons might sometimes envy."

Thus far we have been concerned with cases of what is called "intellectual insanity," wherein, by supposition, no doubt exists as to the diagnosis of the disease; for although there may be some instances in which the symptoms are too obscure to be discovered in a single interview, sufficient care and time will, as a rule, enable an expert physician to detect the malady with certainty. At all events, such forms of lunacy are never to be inferred merely from the commission of a criminal act.

But, passing from these, we reach a far more puzzling series of sudden outbursts, grouped under the heads of "affective," "emotional," "volitional" or "impulsive" insanity, characterized not by delusions or other marked disturbance of intellect, but by the predominance of instinctive impulse over volitional control. As regards these, a broad distinction, from the juryman's point of view, may be made between acts of purposeless violence, done in a state of actual unconsciousness analogous to acute mania, and those done with purposive vindictiveness. Thus an epileptic patient may have after a fit—or in place of a muscular fit—a paroxysm of furious mania, during which he will commit purely automatic violence; or he may be conscious of the approach of the "masked epilepsy," and warn those about him of the impending danger; and it must be admitted that in certain rare instances epilepsy may manifest itself solely by such uncontrollable mental convulsions, in a person who has never shown bodily indications of the malady. There are, however, other epileptics whom it is sought to excuse for intentional assaults on the ground that they are morbidly irritable and prone to commit violence on the slightest provocation; that, in brief, "all their passions acquire extreme energy." How much weight this argument ought to have, must be determined on the individual merits of each given case; as a general proposition, it is no more valid than would be the allegation that an irritable and violent temper should absolve a non-epileptic criminal from penalty. A rule with very few exceptions is that the deeds for which epileptic insanity may be accepted as an exculpation are done very violently, without motive, premeditation or secrecy, and are followed by neither remorse nor even remembrance. The chief characteristic of epilepsy, whether in its mental or in its physical phase, is unconscious automatism; and in opposition to the forensic quibbling of the day may be cited Maudsley's avowal, "that an epileptic person may be quite as sane as one who is not so afflicted, and, in the event of his doing murder, quite as responsible."

Of the condition known as "transitory mania" litte need be said, save that most examples of it probably belong to epilepsy, and that in the few which remain there are usually antecedent and present indications of mental disease or of very manifest tendency thereto. "Possibly there may have been a sudden outbreak of insanity which ceased as suddenly as it came on; but, unless there was strong evi-

dence of it other than the crime, it would be proper to refuse to admit it."*

Somewhat analogous is the state of mind—or, rather, absence of mind—which has passed into a by-word under the name of "morbid impulse," where a person, acting "without passion, without delusion, without motive," is irresistibly impelled by an instinct "like the craving thirst for drink" to commit murder or other criminal deed which "his reason disapproves and his moral nature abhors, aghast at himself the while." The essential feature of this alleged form of disease is that, without apparent derangement of reason or loss of consciousness, the patient is possessed by "a violent impulse, which, swallowing up reflection and will, irresistibly utters itself in convulsive action."† But when we come to look at the matter more closely, we find that even the strongest advocates of the doctrine of irresponsibility entertain doubts as to the existence of such an uncomplicated, single-symptomed malady. Maudsley acknowledges that "in most of the genuine cases," "symptoms of derangement in addition to the morbid impulse, either antecedent to or concomitant with it will be discovered, if a careful enough examination be made," and, following Bucknill, ascribes many examples of paroxysmal violence to the earlier stages of recognized varieties of insanity, or to the epileptic category. Blandford, showing that "all insanity is impulsive, all insane patients are liable to commit such acts," affirms that "the act which is supposed to be committed under the influence of insane impulse is rarely, if ever, the first symptom of insanity or brain affection shown by the alleged lunatic," and teaches that "if we could sufficiently examine all the cases of so-called 'impulsive insanity,' and really ascertain the entire history and phenomena previous and subsequent to the commission of the act, we should find many other signs and symptoms of insanity, and should be able to assign to the majority of the patients places in the ranks of the ordinary varieties and classes of the insane." Farther on, still speaking of the same subject, he says: "The scandal which has come upon evidence given in doubtful cases of insanity, has arisen from medical men giving their opinion after an amount of knowledge and examination of the patient which in no degree warranted any opinion at all. Half an hour's conversation with a patient may tell us very little about him; it may be necessary to see him again and again; to see a woman at various periods of the month; above all, to observe a patient without his knowledge—in the night, at meals, in various occupations, and to see what he writes, if he can be got to write. We shall have to consider his motive for the crime—if it be a crime—the method of its performance, and the preparations for it, and his present feelings with regard to it," etc. A fair general statement of the phenomena of this particular phase of lunacy is that acts of violence may be done with *intention*, but without rational *motive*. The affected person has an intense inclination to kill some one, he does not care whom; his victim may be his dearest friend or an entire stranger; but when his impulse vents itself by selection upon an enemy in revenge of an old-standing

*Maudsley, *op. citat.*

† Maudsley, *op. citat.*

grudge, the coincidence should rouse strong suspicion of the genuineness of his disease. Even where such vengeful memory is not shown, Hammond* places irresistible impulse and emotional insanity on a par with "heat of passion," depriving them of all palliative force when accompanied by "a deliberate purpose to commit murder or other crime;" and in his latest work† insists that if a person feeling a growing impulse to commit crime do not immediately place himself under restraint, "he is morally and legally in no better position than a ruffian who feels an impulse to acquire other people's property, and accordingly murders the man most convenient for his purpose." In most instances the gradual development of such morbid longings, from their repressible onset to the point where reason yields to them, gives ample time to follow this advice; but recorded observations force us to recognize the exceptional occurrence of attacks in which the domination is sudden; and here the discrimination is a nice one. Most of us who call ourselves sane have occasional morbid impulses—not, perhaps, homicidal in extent, but prompting us to do foolish, if not criminal things; madness consists not in the origination of these, but in the inability to master them by will. Among sane people, too, individual temperaments differ so that an excitable person is led away by feelings which cannot move the phlegmatic soul. Nay, if we carry neurological refinements to an extreme, it might be plausibly argued that excitability or a violent temper is proof of a defective organization of the nervous system, and that therefore no one ought to be held responsible for any impulsive action. Where this plea of "volitional insanity" is brought into court, the point to be decided is, as Maudsley has said, "Whether the impulse was really irresistible or whether it was only unresisted;" or, as the present writer phrased it three years earlier,‡ "The question to be solved in such a case is not the *difficulty*, but the *impossibility*, of resisting an emotional impulse. . . . . Frequently the impulse is rendered 'irresistible' by the absence of a sufficiently strong motive to resist it. A well-bred man may preserve his coolness under an insult in the presence of ladies which he would be 'irresistibly' impelled to resent on the spot if offered elsewhere; and even in the case of an undoubtedly insane impulse, it may be questioned whether the certainty of legal penalties would not often turn the wavering scale in favor of self-control."

Finally, we have the juryman's puzzle, invented by Prichard forty years ago, under the title of "moral insanity"—a title which, as our knowledge of mental disease advances, is less and less frequently met with in medical literature. In such cases we are asked to declare criminals irresponsible solely because their conduct "appears to be governed by immoral motives which are cherished and obeyed without any evident desire to resist them," although "their mental resources seem to be greater sometimes than when they were well, and they reason most acutely, apparently because all their intellectual faculties are applied to the justification and gratification of their selfish desires." Now, whilst it is beyond dispute that moral perversion

* "Insanity in its Relations to Crime."

† "Diseases of the Nervous System," 6th edition, 1876.

‡ *New York Medical Gazette*, May 27th, 1871.

may be among the early symptoms of various forms of insanity, we may, with Blandford, "deny that the absence of the moral sense proves or constitutes insanity, any more than its presence proves sanity;" and the same author adds: "Probably greater wickedness is daily perpetrated by sane than ever was committed by insane men and women; so that when immorality makes us question a man's state of mind, it must be remembered that insanity, if it exists, is to be demonstrated by other mental symptoms and concomitant facts and circumstances, and not by the act of wickedness alone." So, too, Maudsley (who is almost alone among modern writers in adhering to a separate classification) avows that "the vicious act or crime is not itself proof of insanity; it must, in order to establish moral insanity, be traced from disease through a proper train of symptoms, just as the acts of a sane man are deduced from his motives; and the evidence of disease will be found in the entire history of the case." In short, this so-called moral insanity, as an analysis of Prichard's own cases shows, is but an isolated symptom of more general diseases, the term embracing, in Hammond's words, "several species which are now more properly placed under other heads;"* or, to speak more accurately, perhaps, referring, in the majority of examples, to certain stages of otherwise defined mental disorders. But even granting, in any given case, the insanity in other respects of a culprit whose reasoning powers are for the time unimpaired, and who deliberately "gratifies his selfish desires," with capacity to understand the consequences of his acts, the question remains whether he should be exempt from punishment, and this question common sense must answer in the negative, unless we are prepared—and with much better reason—also to exculpate all sane criminals whose moral sense has been blunted by early training and association. In the latter case the mental condition is as far, or sometimes farther, from a healthy standard, as in the former.

It would have been easy to multiply quotations from recognized authorities in support of the views herein advanced; but it has seemed preferable to cite recent works by writers who are oftenest referred to by counsel for the defense; and if large use has been made of Maudsley's statements, it is because he, of all living alienists, is most inclined to seek mental palliation for criminal actions. From all that has been said, it is evident that acts of violence committed by persons of unsound mind are divisible into two general classes: those which are purposeless and automatic, or of which the purpose would be justifiable if the lunatic's premises were true, and those which are prompted by a conscious intent to do wrong. In the former class of cases there can be no doubt of the actor's irresponsibility; in the latter, neither ethics nor justice demand his absolution. We might, perhaps, stretch a point in sympathy with the concomitant mental unsoundness, and refrain from inflicting the death penalty; but we should see to it that the intentional criminal lunatic shall not escape punishment altogether, as he is now allowed to do under our statutes. Even where murder is apparently motiveless, we should insist that the murderer be segregated from the community for life; since

*"Diseases of the Nervous System."

all authorities agree that "homicidal mania," from whatever cause arising, is very apt to recur. As it is, our laws (which accept the preposterous verdict that a man may be sane up to the very moment of committing a purposive crime and recover permanent sanity immediately thereafter, being the victim of brain disease only at the instant of the act) prescribe the farcical formality of sending the alleged lunatic to an asylum, whence he must be speedily released as "recovered." The difficulty of determining the motive of an action, or even the existence of insanity, is in many cases very great—in nearly all insuperable to the unprofessional observer—and there will always be room for medical experts in medico-legal cases; but there is no reason why these should confuse instead of simplifying legal proceedings. The wisest plan would be to refer all testimony concerning mental unsoundness to a permanently organized commission in lunacy, on whose report an intelligent decision might be reached. A step in the right direction was made in the New York Act of 1874, directing that the plea of insanity be received only at the time of arraignment, and empowering the court to appoint a commission of inquiry; but the appointment of such commission is optional instead of obligatory, and no guarantee is demanded as to the special qualifications of the temporary commissioners. Much, therefore, still remains to be done, to bring law and medicine into equitable harmony. Meanwhile, jurists and jurymen will do well to bear in mind that insanity, if genuine, is shown in other ways than by a single action; that "hypothetical questions" are useless, each case requiring thorough and painstaking examination on its own individual merits; and, lastly, that a person whom no physician would hesitate to pronounce insane, may, nevertheless, commit crime with a reasoningly culpable purpose.

Experts in Legal Proceedings.—James Appleton Morgan said: One point of the paper just read is of interest to the profession to which I belong, and that is the question of experts in legal proceedings. I am sure every lawyer will agree with me when I say that there is no one difficulty which is encountered by the profession which equals or surpasses that of procuring experts. It is the most ordinary spectacle for a lawyer on one side of a cause to go into court with his experts, and to see an equal number of experts arrayed on the other side.

I do not know that there has been a better illustration of this state of affairs than in the celebrated Wharton trial in Baltimore, several years ago. I think, however, that that case is an exception to most cases of its class, because in that case the medical gentlemen testified conscientiously to what they believed to be true. The trouble was that the question was a novel one, and these gentlemen testified according to the theories held by their various schools.

In my opinion a lawyer is just as much doing his duty by arguing on one side as by arguing on the other; and one of the most valuable criterions of the fact that a cause has been fully and justly tried is the fact that it has been fully argued on both sides. Nobody can decide the truth of a question unless he hears both sides.

I quite agree with the paper in the suggestions regarding a per-

manent commission of inquiry. These things are done better in France than in this country. In France there is a Standing Committee of Experts, authorized by the Government, to whom is referred questions of this character, and whose testimony has a sort of legal weight, the details of whose office I am not able to speak of; but I desire, at a future meeting of the Society, to discuss this question more fully, and I now move:

Resolved, That this Society appoint a committee of five to inquire into and ascertain concerning the system of standing medical and surgical experts appointed by law and attached to courts of justice understood to be provided for by the laws of France.

Such an investigation would be a credit to the Society; and if such a system were established, I look forward to the time when it might attract attention outside of this Society; when even the Legislature may refer to this committee to instruct them upon the working of such a plan, with a view to engrafting it upon our jurisprudence.

MR. G. H. YEAMAN: Before that motion is put, I would like to say that I do not doubt that one reason why there has been no more extended discussion of the very able and ingenious paper of Dr. Carroll, is that the importance and the abstruseness of the subject has caught many members unprepared. I am sure it has caught me in that condition. I desire to say, however, for the legal side of the house, that it opens up one of the most important fields that can occupy the attention of the profession. When I first began to turn my attention to the subject of insanity in its legal aspects, I found myself inclined to excuse everything done by a man either insane or partially insane; I did not "chip," as they say. I was "brought up standing" by discovering that some of the leading physicians went just as far in the other direction, and argued for the punishment of the very people whom the legal profession had been excusing on account of insanity.

I am compelled to say that the argument of the paper has made a deep impression on my mind, and leads me to inquire whether there is a case where a little punishment would not have resulted as a wholesome restraint.

The resolution of Mr. Morgan was adopted, and the following gentlemen named as the Committee: Mr. J. A. Morgan, *Chairman;* Mr. D. S. Riddle, J. F. Chauveau, M.D., Mr. Clark Bell, Emil Gruening, M.D.

Amendment of the By-Laws.—MR. D. S. RIDDLE offered the following amendment to the By-Laws of the Society, which was referred to the Executive Committee under the rule:

Art. VIII.—*Duties of the Trustees.* Sec. 1. The Trustees shall have charge of and safely keep the property of the Society, and, in its name, keep the same fully insured.

Sec. 2 They shall take an inventory of such property in each year, a short time prior to the annual meeting of the Society, and report the same at such meeting, together with the condition and situation of the library and other property, as well as their doings generally during the preceding year, and perform all other acts pertaining to like trustees.

Confidential Communications to Physicians.—The fol-

lowing letter was received, and on motion was referred to the Permanent Commission:

No. 1924–6 Spruce St., Philadelphia, Jan. 29th, 1877.

J. F. Chauveau, M.D., Corresponding Secy., etc.:

By request of the Council of the Obstetrical Society of Philadelphia, I have the honor to transmit to you the following resolution, begging that you will, at your convenience, obtain the action of the MEDICO-LEGAL SOCIETY in regard to it: "*Resolved*, That a communication be addressed to the Medico-Legal Society of New York, asking its experience of the law extending the privilege of confidential communications to physicians; and whether, in the opinion of that body, it is advisable for their brethren of this city and State to take steps to secure the passage of a like act."

Very respectfully yours,

JOHN H. PACKARD, *Chairman of Council, etc.*

Corrigenda.—DR. EDWARD G. LORING, author of the paper on *School Hygiene*, read at meeting of the Medico-Legal Society February 7th, and published in our last number, is a resident of New York—126 Madison Avenue; not "of Boston."

———o———

A Legal Dilemma.—At an examination for the admission to the bar of Ohio, the examiner propounded this question: "A great many years ago there lived a gentleman named Lazarus, who died possessed of chattels, real and personal. After this event to whom did they go?" The student replied, "To his administrator and his heirs." "Well, then," continued the examiner, "in four days he came to life again; inform us, sir, whose were they then?" Which interesting inquiry we submit to the lawyers. I am not a lawyer, but I see no difficulty in the inquiry. Lazarus died and was buried. As soon as he died, his property, if he left no will, vested in his heirs. The law gives no man the right to die for four days and then come to life again. Legally Lazarus couldn't rise. I have no doubt the Supreme Court would decide that the Lazarus who rose was not the Lazarus who died; he was a new Lazarus. The new Lazarus would of course feel within himself that he was the old Lazarus, and go round boring his legal friends talking about his legal wrongs, but every lawyer would leave him as quickly as possible, saying in parting, "It's a hard case; but if your heirs can prove your death, and they came in legally under the statute, there is no way to make them disgorge. All you can do is this—you're a young fellow about sixty: hire out as a clerk, try to save something from your salary so as to go into business again, build up a grand estate, and perhaps your heirs will recognize your identity."—*Cleveland Herald.*

SANITARY KNOWLEDGE FOR SCHOOL CHILDREN—SEED IN GOOD GROUND.

A reform which offers no personal gain to its advocate must depend for its success upon education. The principles which underlie it must be inculcated in childhood. The youth of a community must be taught the necessity of it, then, as members of the body politic, in after years, they can be counted as its advocates.

The veteran, who attributed his longevity to the fact that he went to bed, each night, drunk, is not loud in his praises of excise or prohibitory laws; but the youth instructed in the baneful effects of intemperance to the individual as well as to the community, will readily lend his aid to whatever, in his judgment, he thinks may diminish the ill effects of the immoderate use of stimulants.

It seems to me that the advocates of sanitary reform are putting off the harvest time to an indefinite period, when they neglect the instruction of the youth in this vital matter. All over the country the physician is a man of influence in the community. He is appointed on school boards or his words have weight with school officers. In either case let his voice be raised for instruction in sanitary matters. There is a wide-spread opinion among educated, college-bred men, that a physician's office is to prolong disease rather than to cure or to shorten it. As we go down in the scale of education this opinion becomes a belief. Hence, in most cases, a physician is not summoned until the disease has such a hold that it must run its course. Consequently, the patient dies or recovers but slowly. In either case his friends are strengthened in their opinion of the physician's office. When a physician zealously advocates sanitary reform he does much towards eradicating this error, and rises proportionally high in the estimation of the community.

In discussing what knowledge is of most worth, Herbert Spencer places, first, that knowledge which prepares for direct self-preservation; and second, that which prepares for indirect self-preservation. Sanitary science does this. As at present constituted, our schools do not impart this knowledge except to a very limited extent. If it be replied that physiology is on the list of studies in all schools, and that text-books on this subject are numerous, I beg the reader to reflect, first, upon the place of physiology in the list of studies.

In the schools of the City of Churches it is placed in the last year of the school course, with sixteen other studies. Not one pupil in a hundred of those who enter the primary classes ever reach this study.

How much knowledge of sanitary matters is diffused through a community in this manner? The faith of our homœopathic friends is not equal to this dilution.

Think, again, upon the value of the instruction given. With such a multiplicity of studies, the teacher never goes beyond the text-book. The pupil learns that muscles are not bones, that the liver is a gland, and that the heart is a muscular organ; that the food, in some way or other, is turned into blood. Beyond this there lies a nebulous mass of learned names, barbarously pronounced and ignorantly ap-

plied, which the first contact with the world dissipates, as a summer's sun does the mist of the morning. Our allopathic friends cannot swallow this for sanitary instruction.

The text-books on this subject are mere table-books and catalogues of names, or else their familiar style is so gelatinous that the student is unconscious of swallowing anything. One author treats the subject from a chemical stand-point, another from an anatomical stand-point, while the third combines the two with an unprofitable result.

The remedy is obvious. Give sanitary science an earlier and more prominent place in the school curriculum. A child can comprehend the necessity of pure air, pure water and pure food, if he cannot locate the *metatatarsus* or define the *medulla oblongata*. He can comprehend the means of obtaining these, even if he cannot get a seat in the Board of Aldermen and vote to fill sunken lots with city garbage. He can teach his children the necessity of them and die a Christian, though he may not die a Health Commissioner who permits swill-milk to poison infants, or the malarial exhalations of some politician's bog-hole to smother the life of those more advanced in years. But, when the future child thoroughly comprehends these things, the Aldermen will not fill sunken lots with street cleanings, and the Health Commissioners will not dispense bob-tail milk;—for the material which supplies and creates such offices will have ceased to exist.

PHILO.

———o———

Crabs.—The crab is like too many old fogies in this wicked world—they are always traveling backward. They are types of the anti-progressive ideas which should move the age in which they live.

The crab clings to anything which is thrust at him with a grip which nothing on earth can sever, and the human crab sticks to old exploded theories and notions which ought to have been forgotten long ago. They can see nothing good in the present—nothing is done as it should be, in these degenerate days!

The crab is pugnacious; he will fight upon the slightest provocation. There is something peculiarly funny in watching a fight between two of this species. They walk up to each other tail first, like a pair of kicking mules, and pitch in.

But if the animal crab is warlike, the human crab is doubly so. He will not for a moment endure a wrong done to his cherished theories. All the gentility, eloquence, manners, everything, are things of the past. They are like some of the lauded men of the past, prosy and dull; but no matter.

Tell the human crab so and he will at once swell up and puff himself like his namesake. His face is of the same color, and his eyes flash fire. He launches at your head Patrick Henry, Washington (who never told a lie), because—but no matter: he is dead now. Jefferson, Joyce Heth, Bunker Hill, Rob Morris and Hail Columbia, and if you are the man you are taken to be, he beats you.

"My father never did so!" is an unanswerable argument.

These crabs never seem to think that new principles are being evolved day by day, and it is running the head against stone walls to try to convince them.

You can eat the animal crab, but the other kind are too tough for mastication.

MORE ABOUT GARDEN CITY AS A CITY OF HEALTH.

To the Editor of THE SANITARIAN:

Your correspondent, "Long Island," in the May number of THE SANITARIAN, gave some facts of great interest concerning Garden City, on the Stewart property, in Queens County, L. I., and which he was pleased to designate a "City of Health." That the name given is an appropriate one, all persons familiar with the locality, and with the general geological structure of the region, will readily admit. There is probably no place on the Atlantic seaboard where so many of the indispensable requisites of health are assured, or are more obvious than at Garden City; and, we may add, over a very wide area of country round about.

The most striking sanitary features of the place are: an inexhaustible supply of the purest water, the perfect conditions for subsoil and surface drainage, and, consequently, total absence of malaria, and of the causes which produce it. With these conditions, and a climate tempered by the contiguous ocean shore, the "Old Hemstead Plains," under intelligent cultivation, are rapidly assuming features of utility and beauty, and must, eventually, become immensely important as suburbs of Brooklyn and New York.

The water supply of the region is wholly from rainfall, the average of which is about 43 inches a year. It has been estimated that three-fourths of this sinks into the porous soil. The surface waste is certainly small, and occurs in winter when the ground is frozen.

The subsoil which holds the water is clean silicious gravel and sand, and free from aluminous and calcareous matters. In the progress of the work in founding this new city, there is not a single instance where decayed or decaying organic substances have been found in the soil. The soil deposit is in layers, the beds having a dip southward or towards the ocean, the total depth being at least seventy feet. It is probably much more in places. Six miles southward the depth was found to be sixty-eight feet, with a deposit of compact blue clay underneath. At Garden City a dense crust or "hard pan" was found, by boring through the gravels, at seventy feet below the surface.

The beds of sand we are considering are evidently formed of the boulder drift of which the Island is composed, disintegrated and ground to sand and gravel by waves of the ocean during a period of coast subsidence. These sands now constitute a vast reservoir of water from rainfall, more perfect than any which human ingenuity has contrived. Wells sunk into the saturated sands are inexhaustible. The one at Garden City is fifty feet in diameter; the surface of the water in it is twenty-five feet below the general level of the "plains" at the place where it is located—in a valley fourteen feet below the general surface—so that the depth of the well or reservoir

to the surface of the water, is only eleven feet. The depth of the water is twenty feet, and rises from the bottom; none gets in through the sides of the reservoir. Water is conveyed to all the houses of Garden City by the Holly System, the pump being adequate to discharge 3,000,000 gallons a day.

The enormous volume of the water supply will be appreciated, from the fact that in constructing the reservoir two wrecking pumps, discharging through pipes ten inches in diameter, were worked continuously day and night for a whole week, in order to lower the water sufficiently to proceed with the work.

As stated, the level of saturation in the soil at Garden City is about twenty-five feet below the surface. The elevation of the surface is about 103 feet above tide, or nearly the same as that given by the Long Island Railroad Survey for Mineola. According to the observations of W. R. Hinsdale, Esq., the thoroughly competent manager of the Garden City site, the surface of saturation in the soil has a slope southward or towards the ocean of eight feet to the mile. This is less than that given in the original surveys for the Brooklyn water-works, by about one-third. But the result stated in the survey, 12½ feet to the mile, was from an *average* of many observations, over a very wide area. The slope of the surface is not uniform, but undulating between twelve and twenty feet.

At various points southward of the "plains" the water breaks out, forming streams into the valleys. In a distance of fifty miles along the south shore of the Island there are no less than sixty of these spring streams flowing into the bay, and some of them are utilized in the water supply of Brooklyn.

From the fact that the level of saturation at Garden City and over the entire "plain" district of Long Island is many feet above tide water, there occurs a ceaseless movement of the water in the soil—slow, indeed, but persistent—which will flow on so long as clouds drop in rain upon the region. And thus it happens that the entire volume is constantly in motion, never stagnant. The quantity which falls upon the ground is immense. Forty-three inches of rainfall is more than 3½ cubic feet upon a square foot of surface. For convenience of calculation, let us assume that three feet penetrates the soil. This would give more than 83,000,000 of cubic feet upon a square mile, or two and a half millions of tons. A freight car will carry ten tons. Two hundred and fifty thousand cars, therefore, would be required to convey the rainfall upon one square mile in a year. It is easy to see that the volume in the subsoil reservoir is immense, while the waste by streams is enormous—but the supply is adequate.

The level of saturation in the soil varies but little in a year. It is certain, therefore, that the entire volume of water, excepting that which is lifted by evaporation or absorbed by vegetation, is steadily and incessantly moving towards the ocean; not in the form of a subterranean stream or river, but in entire mass.

From the facts stated, the conclusion is evident that the conditions both in the soil and upon it do not permit of stagnant water. There is no such thing as a stagnant, fetid, or malaria-breeding swamp or slough on the whole area of the Stewart purchase, and the same is true of an area contiguous vastly more extensive. The purity of the

soil, and of the water-supply at Garden City, is carefully guarded. No sewage is permitted to enter the soil. At present it is discharged in cemented cesspools, and quickly removed. Soon, however, new works will be completed for collecting it in a reservoir covered by buildings, in which the process of deodorizing will be instituted, and the material, after due preparation, be used to fertilize the land.

Your correspondent in May deserves the thanks of the community, for calling attention to the sanitary aspects of a region so closely identified as Garden City must soon be with the two great cities of Brooklyn and New York.

It is eminently important that people seeking homes in the country should be thoroughly informed as to the conditions in respect to health. They ought to know whether or not the air they are to breathe and the water they are to drink is laden with miasm or the germs of fever.

Such information, in respect to Long Island especially, is greatly needed. It is probably true that among the people of New York, less is known of Long Island in respect to its structure, topography, climate, soil, sanitary conditions and scenic aspects, than of the shores of the Dead Sea.

Brooklyn, May 10th, 1877. E. L.

———o———

The Stewart Memorial Church at Garden City is progressing rapidly. The first tier of iron beams which are to support the tiled floor, have been placed in position, and the walls are nearly raised to the sills of the aisle windows. The fine stone tracery on the inside is being put in place, and some slight idea of the magnificence of the building may now be formed by an inspection of the work already done. Judge Hilton is taking special interest in the construction of this noble edifice, and intends to have it one of the finest specimens of ecclesiastical architecture in the country. We have seen tracings of the side and rear elevations of the building, and were surprised at the elaborate beauty of the design. The style is ornamental gothic, with clere-story, decorated with superbly traced windows and surmounted by foliated pinnacles. The spire will be of stone, reaching to a height of two hundred and six feet. The tower will contain the chime of bells purchased by Mrs. Stewart at the Centennial Exhibition. Mr. James H. L'Hommedieu has the contract for its construction. The exterior stone comes from a fine quarry in New Jersey, where it is cut to the desired pattern and brought to Garden City ready to be laid. Much of the interior will be of Ohio stone. The cost of the church will not vary far from one million of dollars. It is expected to complete it in two years.

The probability is that this church will become the cathedral of the diocese of Long Island, and the centre around which will cluster the educational and charitable institutions of the church—at least such seems to be the growing opinion among those who assume to know.—*Hempstead Inquirer.*

Editor's Table.

The Public Health.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,071,786—4 wks. end'g April 28	721	1878	22.78	78	2	74	175	63	7	32	4	2	28	40	319	329
Philadelphia, 850,000—4 wks. end'g April 28	494	1339	20.47	38	30	22	17	16	2	8	7	34		8	24	225	176
Brooklyn, 527,830—4 wks. end'g April 28	263	835	20.56	26		78	70	1	2	8	7	6	2	1	15	136	101
St. Louis, 500,000—4 wks. end'g April 28	165	426	11.07	26		7	5	1	4	9	10	1	3	6	62	104
*Chicago, 420,000—3 wks., April 7, 14, 28	217	430	17.74	19	2	11	31		10	2	2		7	9	47	50
Baltimore, 350,000—4 wks. end'g April 28	286	589	21.87	17		12	46	3	7	6	28	7	4	7	100	59
Boston, 363,000—4 wks. end'g April 28	175	548	19.62	17		26	15		6	5	7		3	6	123	75
Cincinnati, 265,000—4 weeks end'g April 28	108	313	15.35	15	11	4		1	3	6	7		1	6	55	97
San Francisco, 300,000—month of March	82	511	20.44	20	30	110	2		4	1	11		3	6	66	37
New Orleans, 210,000																
Washington, 160,000																
Pittsburgh, 145,000—month of April	105	217	19.46	10	13	7	3	3	3	9	6		2	1	27	27
Newark, 126,000—month of March	123	324	30.85	11		20	17		7		2		3		46	47
Providence, 103,000																
Milwaukee, 100,781—month of April	77	149	18.73		19	8	13	1							17	13
Rochester, 70,000—month of April	34	107	18.34	4		1			1		2				21	16
Richmond, 72,500—4 wks. end'g April 28	33	99	17.75	5			1	2			1		1	2	24	10
New Haven, 60,000—month of April	31	89	17.8	5		6	1		2	2			1	1	16	11
Charleston, 57,000—4 wks. end'g April 28	32	100	22.8													
Toledo, 50,000—2 months end'g April 30	36	96	11.52	6	1	1	5	1	4		1				12	15
Mobile, 40,000—month of March	28	78	23.4	9	2										10	12
Dayton, 36,000—month of April	18	38	12.66	2					1						10	2
Nashville, 27,000—month of April	19	44	19.56			11			1	1					8	5
Wheeling, 28,000—month of April	17	34	14.57	1			6			1	1		1		7	5
Buffalo, 170,000—2 months end'g April 30	97	318	11.22	15		7	2		6	1	8		2	3	54	38
Knoxville, 13,000—month of April	8	16	14.40					1							1	4
Paterson, 39,000																
Petersburg, 20,000—4 wks. end'g April 28	12	34	22.1	3									1	2	7	5
Lansing, 8,400																
Selma, 8,000—month of April	2	9	13.50												2	2
Elmira, 20,093																
Yonkers, 18,000—month of April	10	35	23.33	1		1	2		1						12	5
Memphis, 45,000—month of April	12	61	16.26	6			1			1			2	1	13	5
Erie, 26,057—month of April		29												1	8	6
Detroit, 115,000																
Syracuse, 60,000																
Bowling Green, 6,000																
Evansville, 46,000—4 wks. end'g March 31	30	65	18.36			1	1	1	4		2		1	1	8	12

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during three weeks ending March 24th, 18,337 births and 13,006 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 5,331. The mortality from all causes was, per 1,000—in London, 26.66; Edinburgh, 24.66; Glasgow, 34.8; Dublin, 35; Portsmouth, 20.66; Norwich, 25; Wolverhampton, 30.66; Sunderland, 22; Sheffield, 25.33; Birmingham, 27.33; Bristol, 24.66; Liverpool, 29; Salford, 34; Oldham, 39.33; Bradford, 25.66; Leeds, 27; Hull, 27.33; Newcastle-upon-Tyne, 24.-33; Leicester, 29.33; Manchester, 32; Nottingham, 28.33. Other foreign cities at most recent dates, per 1,000—Paris, 33; Rome, 36; Vienna, 28; Brussels, 24; Berlin, 25; Hamburg, 30; Calcutta, 26; Bombay, 42; Madras, 132; Amsterdam, 32; Rotterdam, 31; The Hague, 25; Christiana, 17; Breslau, 26; Buda-Pesth, 45; Turin, 27; Alexandria, 50; Copenhagen, 24; Munich, 29; Naples, 40.

*April 21st not received.

Population.—There is one feature in our first article, "Vital Statistics," by Dr. Allen, to which we would invite special attention, viz., that the birth-rate of a people depends very much upon a particular type of organization, and hence there must be a certain physical standard, which determines the *law of population*. In proof and illustration of this theory, Dr. Allen has published at different times quite a number of papers, which have attracted much attention, not only in this country, but also in Great Britain. It would seem, from the statistics here presented, that a marked change or decline in the birth-rate of New Englanders has been taking place for some time, and which, in some respects, corresponds to that of France.

Many inquiries have arisen within a few years, as to what were the causes of this decrease or stationary state of population in that nation, and the prevailing opinion expressed, that the causes usually alleged for such changes could not account for the present state of things. Among the various works recently published on the subject in France is one by M. Bertillon, who, after most thorough investigations, reaches conclusions similar to those of Dr. Allen. He maintains that the French people, as a whole, are in very good circumstances, and while exercising much foresight in providing for themselves and their families, they are quite indisposed to assume greater burdens or responsibilities than need be. They have set up a higher standard of living than they have means to gratify, and they must direct all their energies and economize their means to reach as far as possible that standard. These propositions are illustrated by M. Bertillon in a great variety of ways, but the question might naturally be raised, What led to this high standard of living? What should prompt in the French this peculiar prudence and forethought in their modes of living and the objects of life? Why should they differ from their neighbors, the English and the German? May not peculiarities in physical organization account for these changes and differences?

Brooklyn.—The Registrar of Vital Statistics has kindly sent us an advance sheet of the Report of the Board of Health now making up for 1876. Total mortality from all causes, 12,304.—From zymotic diseases, 4,371; constitutional, 2,483; local, 3,890; developmental, 933; violence, 627; small-pox, 301; measles, 159; scarlatina, 348; diphtheria, 810; croup, 412; whooping-cough, 189; typhus fever, 10; typhoid fever, 88; diarrhœal diseases, under five years of age, 1,367; diarrhœal diseases, all ages, 1,546; alcoholism, 54; puerperal diseases, 108; consumption, 1,533; pneumonia and bronchitis, 1,261. In the aggregate, the mortality was less than in 1875 by 160. From diarrhœal diseases, 356; consumption, 27; other diseases of the respiratory organs, 66; measles, 151; and scarlatina, 44, *more* than in 1875. From small-pox, 310; diphtheria, 155; croup, 39; typhoid fever, 14; consumption, 134; puerperal diseases, 26; and still-births, 25, *less* than 1875. Ratio of mortality for the year (estimating population at 500,000), 24.60. But there should be added to this estimate the mortality of the county institutions. **The Commissioners of Charities** report for the (fiscal) year, ending July 31st, 1876, on the care and subsistence in the several institutions, have relieved, temporarily, the following number of persons:

In the Almshouse	2,805
" Hospital	4,270
" Lunatic Asylum	1,080
Outdoor poor	48,258
Total	56,413

Of the *sick*, Dr. JAMES A. BLANCHARD, Superintendent of the Lunatic Asylum, reports under his care 1,080. Of this number, 314 were admitted during the year, and 270 discharged. Deaths, 62;—less than any year since 1870, when there were 872 patients under treatment and 58 deaths. The Asylum has been free from contagious diseases, excepting small-pox, of which there were eight

cases, promptly sent to the small-pox hospital, and all recovered but one. Of other causes of death: from diseases of the lungs, 21; mania, 10; apoplexy, 7; paresis and old age, each 4; softening of the brain, 3. Dr. P. L. SCHENK, Superintendent of the County Hospital, reports: Total number under treatment for the year ending July 31st, 1876, 4,270—an increase of 891 over the number for the last preceding year. Total number admitted to small-pox hospital, 1,060. Chief diseases for which other patients were admitted: syphilis, 280; alcoholism, 192; fevers, 151; ulcers, 142; parturition, 132; diarrhœal diseases, 123; diseases of the respiratory organs, 327—of which 118 were for consumption; rheumatism, 170; insane transferred to asylum, 76; wounds, 48. Of other diseases from 1 to 39. "The result of treatment was as follows: 2,908, or 70.2 per cent., were discharged recovered; 400, or 9.1 per cent., were discharged improved; 47, or 1.1 per cent., were discharged unimproved; 514, or 12.1 per cent., died. Deaths from small-pox, 164, or 16 per cent." Assuming that the mortality of these institutions was about as great for the six months ending December 31st, 1876, as it was for the corresponding six months of the year before, the mortality of Brooklyn for the year 1876 was, including these institutions (576), which belongs to it, 12,880, and the **ratio per 1,000, 25.76.**

New Haven.—Annual Report of Board of Health for 1876. Population, 60,000. *Births*, exclusive of still-births, registered 1,857, a decrease of 157 as compared with the previous year: 30.95 per 1,000.

Marriages, 523, a decrease of 67 on the previous year: 8.71 per 1,000.

Deaths, 1,228, one less than the previous year: 20.46 per 1,000. "While the total deaths in each of the years 1875 and 1876 were so nearly identical, there was a very marked difference in the classes of disease." Deaths from zymotic diseases, 394—80 more than in 1875; from constitutional diseases, 244—29 less; from local diseases, 408—20 less; violent deaths, 37—14 less, and from developmental diseases 123, the same as in 1875. The increase was principally from diphtheria, 80 deaths against 14 of the year before; measles, 16, against 1, and cholera infantum, 124, against 103. From typhoid fever there were 22 deaths, a decrease of 15; consumption, 75, a decrease of 12.

Altogether the report is a very lucid one, bringing clearly into view the benefits of cleanliness as compared with uncleanliness, by contrasting the different sections and domiciliary conditions of one part of the city with another.

For example, two wards of the city:

The 1st ward, with 6,235 population, had 70 deaths, or 11.21 per 1,000. The 6th, with 6,530 population, had 181, or 27.71 per 1,000. Upon which the President of the Board (Prof. Wm. H. Brewer) remarks: "Had the death-rate of the whole city been as low as in the 1st ward (a rate I fully believe will ultimately be reached, for our natural conditions are eminently favorable), then the whole number of deaths would have been but 673; had it been as high as in the 6th ward (a rate exceeded in many cities), then 1,662 deaths would have occurred. Comparing these two wards with each other, we find in the 6th 107 deaths more than would have occurred had its death-rate been as low as in the 1st. If this ward had in it a bridge so unsafe that a hundred persons annually lost their lives there, it would be speedily repaired, whatever the cost. Or if we had a local railroad so badly managed that over a hundred of our citizens annually were killed by its 'accidents,' how long would it be tolerated?

"But modern sanitarians believe that such contrasts of death-rate as are here discussed are as much '*preventable*' as are unsafe bridges or railroad accidents. Or, again, if the city had to pay damages for each life lost through unsanitary conditions as surely preventable as an unsafe bridge or a neglected street, how long would it be before the death-

rate of the 6th ward would nearer approximate that of the 1st?"

Dayton, O.—Annual Report of Board of Health for 1876. Births: males, 512; females, 467=979. Ratio per 1,000 of population, 36.77. Deaths, exclusive of still-births (38), and exclusive of the number brought to the city for interment (97), 521. Ratio per 1,000, 14.47. From zymotic diseases, 149; constitutional diseases, 130; local, 181; developmental, 30; violence, 31. Of the deaths from zymotic diseases, 127 were miasmatic; diarrhœal, 34; small-pox, 16; croup, 12; diphtheria, 11; whooping-cough, 11; measles, 8; cerebro-spinal meningitis, 8; typhoid fever, 7. Of the deaths from constitutional diseases, 90 were from consumption; total tubercular diseases, 105. Of the whole number, 213 were of infants and children under five years of age.

The chief unsanitary conditions described are privy pits and well-water in dangerous proximity; neglected vaccination; street filth; unwholesome milk and city hog-pens. These conditions are all forcibly dwelt upon by the Health Officer. They are doubtless the chief factors of the very large proportion of zymotic diseases and consumption, and ought to be abated.

Concord, N. H.[1]—Estimating population at 14,000 (12,241 in 1870), ratio of mortality, per 1,000, 14½. No causes of death, no data of any kind given. Excepting a little more than two pages devoted to a congratulant statement that the health of Concord is better than it should be, as compared with the mortality of most other cities in this country, the report consists of an essay *On the Necessity of a Thorough System of Municipal Supervision of Sewers*, by G. P. Conn, M.D., City Physician, and member of the Board of Health; and the *Importance of Ventilation in a System of Sewerage Work*, by Charles C. Lund, C.E. Both these essays show careful reading, and present concise statements of accepted truths, eminently worthy the attention of municipal governments.

Selma, Al.,[1] presents one of the best examples of health supervision of any small city we know of. Population: whites, 3,500, colored, 4,500=8,000. Total mortality (exclusive of 32 still-births), 135. Ratio per 1,000: whites, 14.28; colored, 13.88; of total, 16.87. Classified causes: zymotic, 38; constitutional, 37; local, 36; developmental, 51; accidental, 5.

Birth registration began, by ordinance, in February. There has been one white child born to each 39.32 of population; one colored to each 33.08.

The importance of sanitary inspection, drainage, waste water, privies, school hygiene, vaccination, infectious and contagious diseases and birth returns, are all urged upon the community as essential measures in all good government.

Milwaukee.—Total mortality for 1876,[2] 1,894. Ratio per 1,000, 18.74. Chief causes: convulsions, 390; diarrhœal diseases, 206; small-pox, 163; consumption (including tuberculosis and hemorrhage of lungs), 157; lung diseases other than consumption, 162; scarlet fever, 119; diphtheria, 95; violence, 95; typhoid and typhus fevers, 37; puerperal fever, 29; *old age*, 55. That there should be such a large proportion of deaths from preventable causes seems to have been no fault of the Health Officer, as his report shows an energy of action which, had it been seconded as it should have been by the civic authorities, would have saved many lives. Of small-pox, the whole number of cases brought to his knowledge for the year was 495, and with the single exception of February, there were cases every month, beginning with one case in January, and ending with 150 in December.

[1] Reports of the City Physician, Board of Health and Sanitary Engineer, for the year 1876–7, pp. 39.

[1] Annual Report of Board of Health for 1876.

[2] Annual Report of Health Officer, comprising Remarks on Sanitary Requirements, with Returns of Deaths, Births and Marriages for 1876.

The first case was that of a young Polish woman, who was an assorter of rags, and from her the disease was communicated to others, and continues to prevail. The law, as interpreted by the City Attorney, gives people in Milwaukee the right to neglect vaccination and have small-pox *ad libitum* not only, but to choose their own places of abode while affected with it, and so kill as many people as they may have mind to! The right to take such persons and care for them in a hospital, where their recovery and public safety would be promoted, the City Attorney declares "would not only be inhuman, but, in *his* opinion, a violation of the fundamental principles of our National and State constitutions, which have always been looked upon as a high value to the citizens of this country." That preventable mortality is *criminal* mortality the City Attorney of Milwaukee has probably never heard. But others of her citizens have, and considering that small-pox has been allowed to prevail continuously in that city for several years, having since April, 1871, killed nearly 1,000 of her people, and caused indescribable suffering to over five times as many more, it seems reasonable to suppose that this right to kill one's neighbor with small-pox ought by this time to be seriously called in question by other and better authority. And small-pox is not the only criminal mortality in Milwaukee. The butchers all over the city are permitted to allow the blood and other animal refuse to saturate the soil of their premises or run into sparsely-flushed sewers, and thus create a nidus for scarlet fever and its congeners, for the destruction of children. Ice from filthy water containing the seeds of typhoid fever and other filth-diseases is permitted to be cut, stored and peddled to the people throughout the city. Low-lived Poles and Germans, who dwell in damp dens, inefficiently or not at all drained or sewered, groveling in and disseminating disease and death, are doubtless, as the Health Officer alleges, a fruitful source of pests; but they are not the only people in Milwaukee who are permitted to do as they please in regard to sanitary requirements. And so long as "ministers, doctors and midwives make returns or not, just they please," notwithstanding "the law is very strict in its requirement and severe in its penalty against persons omitting to make those returns, *yet the law is defied and is a dead letter.*"—So long as this is the case, we may even be permitted to doubt "the fact that no one can be interred without a permit from the Clerk or Health Officer of the Board of Health."

The Health Officer also summarizes the work of the Board in regard to nuisances, garbage removal, etc., and gives brief essays on the "Value of Sanitary Knowledge," "Water Supply," and "*Leaden Pipe*," which, excepting the last, render his report a valuable one for home circulation. But the reasons which he gives in favor of the use of

"Leaden Pipe for Distributing Water for Domestic Purposes," and **against** the use of **tin-lined** lead and iron pipe, are, in our judgment, alike untenable. It may, indeed, be true, as the Health Officer states, "*Provided* the water is drawn often, not allowed to remain in the pipe for any great length of time, always letting it run freely for a few minutes in the morning, before using it for domestic purposes . . . that there is not the slightest danger in using water from Lake Michigan after having passed through leaden service pipe." But this *proviso* is probably as difficult of execution in Milwaukee as elsewhere, and as little observed; while we have no reason to think that the water from Lake Michigan possesses any exceptional qualities which exempt it from physical laws.

One of the most important conditions of excellence and agreeableness in potable water is the condition which, above all others, promotes the solubility of lead—namely, the presence of oxygen. Under favorable circumstances, one hundred volumes of water hol l in

solution three volumes of oxygen; and as oxygen forms one-fifth of the bulk of the atmosphere, it follows that the longer water is exposed to the air—and particularly if it is agitated by the use of machinery or otherwise—the more oxygen it is likely to absorb, and, consequently, the greater will be its solvent power upon lead. Observation proves these conditions under a variety of circumstances. On the contrary, the still water of a covered cistern, though it may be as pure and soft as distilled water—aye, even distilled water itself—which has not been agitated in the air, may be kept in contact with lead almost indefinitely without showing a trace of it. It is, indeed, a common observation, that country cistern water is delivered through leaden pipes with perfect safety; that leaden pipes have lain for indefinite periods in such receptacles of flat, unaerated water, without ever yielding a trace; and this fallacious argument is commonly used in favor of leaden pipes for oxygenated water—water which possesses the most agreeable qualities in the highest degree.

All that is said in regard to the difficulties of workmanship of tin-lined lead and iron pipe, is equally applicable to common lead pipe, for both supply and waste. It is by no means uncommon to find its calibre roughened and obstructed in consequence of careless soldering; and the very conditions which are urged in its favor—softness and ductility—are a constant source of danger by the depredations of rats and its liability to displacement. Whatever may be said, therefore, in favor of the facility with which lead may be worked, or its safety to any particular water supply, it is plain to our understanding that to all *good* water lead pipe is more or less dangerous, and that it ought to be superseded.

Tin-lined lead pipe is, perhaps, equally objectionable as common lead pipe, as regards the difficulties of workmanship and liability to external dangers; but when skillfully applied, it possesses the very important advantage of protection from lead poisoning.

Tin-lined iron pipe, such as that advertised in these pages for the last year, is, on evidence which we accept, free from all the objections urged against other kinds. It is provided with screw couplings, and in angles suited to all curves; the tin and iron are so blended as to be perfectly solid; it can be worked with facility, and be made perfectly tight; the metals are not liable to separate, and the joints have no jagged edges; good workmanship, of course, being understood. The expansive powers of the tin and iron are, at least, so nearly equal, under any possible variations of temperature to which they are subject in this relation, that no difference is detectable by actual experiment. It can be put in at as little cost as lead, and possesses none of its dangers.

Constantinople.—From the *Revue de Médecine et de Pharmacie de l'Empire Ottoman* we learn that two members of the medical profession in Constantinople, Drs. S. E. Marco Pacha and Servicen Effendi, have been named Senators. Dr. Servicien was also elected a deputy from Pera. He chose to take his seat in the Senate. The *Revue* thinks the Imperial Government could not have made a better choice.

M. Vasilaki Sarakioti, a deputy of the National Assembly, is also a member of the medical profession.

Borax Soap.—In answer to an inquiry we have received in regard to borax soap, we have no hesitation in replying that it is the best soap we have ever used; and from an examination we have made of it, we are satisfied that it is all it purports to be, a *pure* soap, made of clean grease, borax and ammonia. It has no irritating qualities or destructive ingredients, and is therefore alike excellent for both toilet and laundry.

Comfort for the Feet.—Twenty-five years' experience of the comfort derived from the easy boots and shoes made by

Messrs. Eugene Ferris & Son, is our justification for this reference to our advertising pages.

Literature.

The Smithsonian Institution, under the able direction of Prof. Henry, with a most efficient corps of collaborators and assistants, continues with unabated energy to fulfill, in an eminent degree, the beneficent purpose of its founder, JAMES SMITHSON, of England, "FOR THE INCREASE AND DIFFUSION OF KNOWLEDGE AMONG MEN." The "plan of organization," as published in the first annual report of the Secretary (Prof. Henry), in 1846—"I. To INCREASE KNOWLEDGE: 1. To stimulate men of talent to make original researches, by offering suitable rewards for memoirs containing new truths; and, 2. To appropriate annually a portion of the income for particular researches, under the direction of suitable persons. II. To DIFFUSE KNOWLEDGE: 1. To publish a series of periodical reports on the progress of different branches of knowledge; and, 2. To publish occasionally separate treatises on subjects of general interest." That these objects have been kept constantly in view is fully exemplified in the annual report for 1875, and the "Contributions to Knowledge" for 1876, now before us.[1] The several annual reports of the Secretary form a continuous history, as well in regard to changes which take place in the Board of Regents, as in the material progress of the Institution. Among the changes in the Board particularly noted by the Secretary, is the loss to education and science by the death of Vice-President Wilson, who "ever advocated all propositions submitted to Congress for explorations and researches which might extend the bounds of knowledge." As an appendix to the report, under date of January 3d, 1876, the Secretary submits his plan of exhibition by the Smithsonian Institution, which was soon after instituted, and carried out with such good effect at the Centennial, giving the people throughout the country, and the world, a better appreciation of the labors and practical results of this benefaction than it seems possible for them to have otherwise obtained.

Besides the full report of the proceedings and financial condition of the Institution for the year, work done in connection with the National Museum, and catalogue of the additions and exchanges, the general appendix of the volume contains valuable papers on the following subjects:

"Eulogy on Alexander Volta," by Arago; "Probable Future of the Human Race," by Alphonse de Candolle; "Report on the Transactions of the Society of Physics and Natural History of Geneva, from July, 1873, to July, 1874," by Alphonse de Candolle, President; "Past and Future of Geology," an Inaugural Address, by Joseph Prestwich, M.A., F.R.S., F.G.S., etc.; "Diminution of the Water of Rivers and Streams," by Hofrathes G. Wex and others; "Refraction of Sound," by W. B. Taylor; "Organization of Local Scientific Societies," a letter from Prof. Henry. Ethnology: "Symbols for Charts of Prehistoric Archæology," by Otis T. Mason; "Ancient Man in Michigan," by Henry Gillman; "Stone Age in New Jersey," by C. C. Abbott—this last is especially elaborate, illustrated by over 200 engravings.

The Explorations of the Aboriginal Remains of Tennessee, by Professor Jones, is a work characterized by the thorough investigation of the subject in hand common to its author. It gives the results of very extended investigation of the remains of the ancient inhabitants of Tennessee, comprehending their modes

[1] **Annual Report** for 1875. 8vo, pp. 422. **Explorations of the Aboriginal Remains of Tennessee,** by Joseph Jones, M.D. 1876. 4to, pp. 170. **Archæological Collection of the United States National Museum,** under charge of the Smithsonian Institution, by Charles Rau. 1876, 4to, pp. 104.

of burial, mounds, fortifications, earthworks, images, arts, domestic implements, weapons, wars, famine and pestilence; and reveals lessons of life peculiar to no race or tribe of men. The ravages of intemperance, syphilis, smallpox, yellow fever and malarial diseases of every kind which are here shown to have contributed so largely to the destruction of the aborigines of America, unfortunately find a counterpart in their successors.

The Archæological Collection of the United States National Museum, as classified by Mr. Rau, which, though far from being exhaustive, as the Secretary states in the preface, represents with great perspicuity the Archæological collection exhibited at the Centennial. "The National Museum has been for years the repository of large and valuable collections illustrative of North American ethnology, which now form one of its most important departments. In classifying this rich material for the purpose of exhibition, . . . it has been thought proper to separate the objects supposed to belong to times anteceding the European occupation of the continent from those that are known to have been manufactured within the period of contact between the Indian and the Caucasian. . . . The first, or *archæological*, series, to which this account is limited, . . . comprises all articles of aboriginal workmanship that cannot with certainty be ascribed to any of the tribes which are either still in existence or have become extinct within historical times. . . . These relics (illustrated by engravings), consisting of chipped and ground stone, of copper, bone, horn, shell-matter, clay, and, to a small extent, of wood, have been grouped according to material, and then classed under such denominations as their forms suggested."—This is but the forerunner of more minute archæological and ethnological works, which will be published in due time under the auspices of the Smithsonian Institution, which will contain almost every object tending to illustrate the domestic life, hunting, fishing, games, warfare, navigation, traveling by land—in short, every phase of the existence of the aborigines of America that can be represented by tangible tokens.

Popular Science Monthly, which has done more to popularize science in the United States during the last five years than any other periodical in this country has ever done—has run over! But "there are more ways," etc., and we now have before us

Supplement to *Popular Science Monthly*,[1] a junior in age only, but in kind equally mature, containing an additional supply of the same sort of knowledge as that which the parent journal has done so much to promote. The *specimen* Supplement (No. 1), now before us, contains: Political Destiny of Canada, by Godwin Smith; "Cram," by Prof. W. S. Jones; Radiometer and its Lessons, by Dr. W. B. Carpenter, F.R.S.; Stimulants, by J. Burney Yeo, M.D.; Modern "Symposium": The Influence upon Morality of a Decline in Religious Belief, a discussion by several distinguished persons; Liebig's Scientific Achievements, by Pettenkofer; One Per Cent., by Prof. Bonamy Price; Giotto's Gospel of Labor, by Sidney Calvin. These papers sufficiently indicate the value and the necessity of the Supplement, in order to fully represent subjects of leading interest, suited to non-scientific people, who would keep up with the progress of contemporary thought.

"The Life Insurance Question," by CHARLTON LEWIS, in the May-June number of the **International Review,** which represents the highest standard of literature of any periodical published in this country, is the ablest paper which has hitherto appeared on the questionable status of life insurance. The au-

[1] D. Appleton & Co., New York, pp. 96. Monthly. Price, 25 cts.; $3.00 a year. Renewals for *Popular Science Monthly* and Supplement, $7.00 a year.

thor's position of Secretary of the Chamber of Life Insurance would alone be sufficient, in the present disturbed state of public confidence in the subject, to attract general attention. But aside from this relation of the author, few persons will read this contribution without being impressed with the magnitude of the subject, and the necessity of more substantial and uniform principles for its guidance than seem to have hitherto obtained.

As represented by companies having agencies in the State of New York, the business of Life Insurance holds invested funds to the amount of more than four hundred millions of dollars; pays in losses annually not less than thirty millions, and collects a surplus income of about the same amount. "The entire ascertained loss to policy-holders by the failures of Life Insurance Companies in the State, during the last generation, has been less than the surplus income of existing companies for three months. If there is any other branch of human enterprise, in manufactures, commerce or finance, which has been carried on so long, and on so large a scale, with so small a proportion of losses, its statistics are unknown. . . . Where, then, shall we find the causes of the wide distrust and apprehension with which Life Insurance is regarded?" Mr. Lewis maintains that the theory of net valuations and reserves as tests of solvency is fallacious in principle, and fraught with the worst results. It misleads by teaching people to expect from Life Insurance what it can never give; by spreading everywhere erroneous views of the rights of policy-holders. "The only proper motive for insuring life is the desire for protection against its uncertainty." While he admits that to allow no surrender value in any case would be an injustice to policies of many years' force, he nevertheless insists that the payment of surrenders in all or a majority of cases is both unjust and unsafe—for the company. As a practical solution of the difficulty, which is both safe for the companies and just to the insured, he recommends the adoption of the same principle which is in equity applied to all mortgages on land. "Let the insurance be regarded as pledged to the company solely in security for the annuity or annual premiums contracted to be paid. . . . Let the company take it at the net price which it appears to have according to the company's own tables of mortality. If this price exceed the value of the annuity secured by it, as determined by the same tables, let the difference be given to the owner of the policy, in insurance—the commodity in which the company deals. In other words, whenever a policy lapses by its terms, let so much of the insurance terminate as is equal in value to the premiums promised and unpaid, and let the rest keep in force. This plan is simple, intelligible and just to all; it is precisely analogous to the rule of equity administered in every civilized land when other kinds of property are pledged; and it is safe to assert that it would never have been sought to make any other principle of adjustment in such cases compulsory on the companies, but for the general abuse of the theory of net valuations."

The Magazine of American History has reached its fifth number, with increasing evidences of substantial value and favor. There is a freshness about the *new* old history which it presents—with finely-drawn maps of the battle-fields, and portraits of the makers of history—which no student of American history can afford to do without, and to every well-appointed library this magazine is a necessity. The leader in the May number is an illustrated description of the Battle of Saratoga, by ELLEN HARDIN WALWORTH. —A. S. Barnes & Co., New York.

Temperance on *Church* principles, it is claimed, is the subject of a recent publication,[1] showing how a temperance,

[1] The Winebibber's Temperance Society. Boston: Lee & Shepard. New York: C. T. Dillingham. 16mo, pp. 76.

but not total abstinence man, organized a successful temperance society. The story is an interesting one, dedicated to unpledged men, moderate drinkers, hotel keepers and bar-keepers. The general principles of the plan are, that all members of the society, whether drinkers or not, are on an equal footing, entitled to the same privileges, but united in an effort to promote temperance as understood by drinking men. The story purports to be founded on an actual example, which met with much opposition at first, but it was, notwithstanding, finally established and found to work well.

On the principle that half a loaf is better than no bread, this plausible compromise, which has been so frequently suggested by moderate drinkers against the intemperance of total abstinence societies, is here made to appear to be successful. But from the very nature of the case, there is an inherent improbability attached to the story which plainly shows it to be fictitious, and its circulation calculated to do harm to the cause which it pretends to advocate.

Duhring's Atlas of Skin Diseases,[1] Part II., fully equals in excellence Part I. The subjects chosen for illustration[2] are no less judicious and equally life-like. The descriptive text evinces a thorough mastery of the subject by the author, giving a concise history of the disease and the cases represented, with a discriminative clearness of description which, in conjunction with the excellence of the illustrations, fully justify all we said of Part I.[3] Both author and publishers have laid the medical profession of this country under lasting obligations, for a better means of making them familiar with Skin Diseases than they ever before possessed.

Mothers and Daughters who are interested in a knowledge of their own organization and special functions, and how to take care of their health, will be interested to know that Dr. VERDI, of Washington, has honored them by the title of a book, just published, which they ought to read.[1] The author is an enthusiast on the subject of his treatise, and makes use of language quite plain enough to be understood by the amateur without reference to the dictionary. Indeed, those organic functions of Mothers and Daughters upon which most works intended for amateur readers say the least, this one has the most to say, and therefore fills a gap between popular and medical works which all women who would be sensible, whether mothers or not, ought to make good use of.

The work is divided into three parts:

1. Physiology of women, comprehending maternal duties to daughters, based upon a knowledge of the special functions of the sex.

2. Hygiene for women, comprehending a study of the social laws and conventionalities of common life in their relations to the health of girls; and

3. Functional Irregularities and their preventive treatment.

We commend it as a work well calculated to ward off many of the ills which those who neglect, or who are ignorant of the truths which it inculcates, are heir to, and which they may by it learn how to avoid.

The National Temperance Society has just reprinted the very able and

[1] Atlas of Skin Diseases, by Louis A. Duhring, M.D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania, Physician to the Dispensary for Skin Diseases, Philadelphia, etc.

[2] Part II. ACNE ROSACEA; ICHTHYOSIS (Simplex); LINEA VESICOLOR; SYCOSIS-NON-PARASITICA. Price, $2.50. Philadelphia: J. B. Lippincott & Co. 1877.

[3] THE SANITARIAN, Vol. IV, p. 477.

[1] Mothers and Daughters. Practical studies for the Conservation of the Health of Girls, by Tullio Suzzara Verdi, A.M., M.D. Author of "Maternity;" President of the Board of Health, Washington, D. C., etc., etc. 12mo, pp. 287. New York: J. B. Ford & Co. 1877.

comprehensive speech of Hon. H. W. Blair, delivered in the American Congress, in support of his Amendment to the Constitution of the United States, prohibiting the manufacture and sale of distilled liquors. The necessity of the step is evident and the argument is conclusive. Every temperance organization in the land should send for a number of copies for general distribution. Single copies, 10 cents, $1 per dozen, $7 per hundred; thin paper, without covers, 6 cents single copies, 50 cents per dozen, $4 per hundred. J. N. Stearns, Publishing Agent, 58 Reade Street, New York.

Notes on Burning Theatres and Public Halls, by Dr. J. M. Toner, of Washington, which formed the subject of a communication to *The Union*, headed "Holocausts of the Past," soon after the burning of the Brooklyn Theatre, have been reprinted in more permanent form, as they eminently deserved to be, as a lasting admonition and convenient reference for the future. Dr. Toner well observes: "The current of life hurries on so swiftly, that the mind soon becomes oblivious to events which, at the moment of their happening, profoundly shocked us, and from which we think we can never recover; but the hopefulness and buoyancy of our nature renders the traditional nine days' wonder too short for us to look for the cause and seek for a preventive against a recurrence. Hence we may expect the public everywhere shortly to forget not only this late disaster, but the fact that there is scarcely a place of public amusement of many years' standing in any of our large cities that has not at some time been burned, and the principal ones a number of times, and that some such shocking catastrophe as the Brooklyn horror may any day astound us here. With a view of refreshing the memory on this subject, and of drawing attention to the liability and causes of fire in this class of buildings, I have looked up the names and dates of such accidents as have occurred in this city. Finding the list in Washington so much larger than expected, I have extended the inquiry so as to embrace all parts of our country, and a few of the most notable instances in Europe. A chronological list of them is appended to the end of this paper."

The list numbers 219.

The Medical Libraries of Boston are made the subject of a very interesting historical, and, to a certain extent, memorial sketch, by Dr. Chadwick.[1] From this sketch it appears that these libraries for the most part owe their origin to the Medical Fathers of Boston, whose sons do well to perpetuate their memories by active efforts to add to the stock of knowledge so nobly begun three-quarters of a century ago, when books were scarce. We confess to some surprise, however, to find that the spirit hitherto manifest in the trust has not been after the example of him on whom ten talents had been bestowed; but there is evidently a better promise for the future, that the time is not long hence when "the medical library of most promise in Boston" will have more than "about three thousand volumes."

The Kidneys[2] are among the most important of bodily organs. They regulate the water supply of the blood, and eliminate therefrom organic compounds which are the result of *dead* and disintegrated animal matter, and which, if retained, cause fatal disease. These secretions are always to be found in the urine, and their varying amounts are suggestive indications of great importance to all intelligent physicians. Hence, an examination of the urine is regarded as essential to an enlightened diagnosis of disease, without which there can be no sound

[1] A Report read at the First Annual Meeting of the Boston Medical Library Association, October 3, 1876, by James R. Chadwick, M.D., Librarian.

[2] *Chemical and Microscopical Analysis of the Urine in Health and Disease, designed for physicians and students*, by George B. Fowler, M.D., Examiner in Physiology, College of Physicians and Surgeons, etc., etc. *Second Edition.* Price, $1 00. New York: G. P. Putnam's Sons.

treatment; and to this end the manual of Dr. Fowler, on the chemical and microscopical analysis of the urine, is one of the best aids which has fallen under our notice.

Syphilis is receiving more and more deserved attention, as among the worst banes which affect the body politic, as well as the cure of the physician. A brochure before us,[1] on the special advantages of minute doses of mercury in its treatment, deserves the attention of all medical practitioners. The author makes a wide distinction between minute *tonic* doses of mercury, one-fiftieth of a grain of the protiodide, or blue mass, and the larger debilitating or fatal doses of several grains too commonly used.

The Opium Antidote business is of the same general character as "bitters" for whisky—the same thing in disguise. Dr. J. B. Mattison, in a paper before Kings County Medical Society, recently, cited numerous analyses of "Opium Antidotes," all containing morphine or other opiate as the only active ingredient. The object of those who compound these nostrums is to fleece their victims, to school them into the necessity of taking the vile mixtures which they prepare as a substitute for the opium previously taken in another form.

The Anatomist.—Lovers of art no less than of anatomy will be pleased to learn that an admirable *etching* of Max' celebrated painting, "The Anatomist," which was so much admired at the Centennial, has been gotten out, and is for sale by R. Berendsohn, 48 and 50 Nassau Street, New York. Price, including postage, $1.25.

The Bergman vs. "Dr." Volker Case, noticed in our May number, has been settled by a *post mortem*. Bergman willed his body to the doctors, and on March 2d hanged himself. "The *post mortem*, made in presence of nearly the entire medical profession of Buffalo and the attorneys in the recent trial for malpractice, showed *fracture of the neck of the femur*, the head of bone resting in the acetabulum, with ligamentous union and absorption of the neck."—*Buffalo Medical and Surgical Journal.*

Brooklyn Rink for Roller Skating.—This novel, healthful and enjoyable exercise for the youth of Brooklyn, to be appreciated, should be seen and participated in. The skates, by their construction, render it possible for ladies, children and those unaccustomed to the exercise, to adopt it readily, and without any of the difficulties and discomforts of skating on ice.

Professors are in attendance to instruct beginners free, and to render assistance to ladies; and the exhibitions of skill by some of the habitués are unequaled. The Rink is eligibly situated and one of the largest buildings of its kind in the world; well ventilated, enclosing an area for skating of over 14,000 square feet of a marvelous surface *de terre glace*—is superbly fitted in draperies, artistic decorations and flowers; is illuminated with surprising effect; and is the first institution of the kind introduced into the United States of the fashionable grand Rinks so popular in Europe, which in beauty and completeness it far excels. The Rink is accessible from New York from the vicinity of Madison Square in 50 minutes by the Rink Omnibuses, or in 55 minutes by cars *via* the Grand Street, Tenth Street or Fulton Ferries.

The General Index to New York Medical Journal, from 1865 to 1876,[1] is a valuable addition to medical literature, whether to those who possess the journal or not. Every library should have it, and few physicians can afford to be without it, for it is a key to a mass of the most valuable medical literature of the times. The *New York Medical*

[1] The Tonic Treatment of Syphilis, by E. L. Keyes, A.M., M.D., Adjunct Professor of Surgery and Dermatology, Bellevue Hospital Medical College, etc. New York: D. Appleton & Co.

[1] D. Appleton and Company, New York, 1877.

Journal has no superior among the medical journals of this country, and to have the *eye* of its pages is to have a very broad view.

Blind Persons in New York.—On information from official sources, Dr. HENRY D. NOYES informs us that the number of blind persons in New York is—in the city, about 680, and in the Island Institution under the charge of the Department of Public Charities and Correction, 120, making a total of 800 persons.

The American Medical Association, to convene in Chicago, June, 5th instant, will hold its sessions at Farwell Hall, beginning at 11 o'clock, A. M.

Members of the Association will be accommodated at the *Grand Pacific Hotel* and the *Palmer House* for $3.00 per day; and at the *Tremont* and *Sherman* Houses for $2.50 per day. These are all first-class hotels and near the place of meeting.

Medicine in Kentucky.—At the recent meeting of the Kentucky State Medical Society, the following resolutions were adopted unanimously:

Resolved, That this Society is in full accord with the American Medical College Convention, seeking to elevate the standard of medical education in this country.

Resolved, That summer schools, which enable students to graduate after from eight to nine months' study, are exerting an evil influence upon the profession.

Resolved, That a winter and summer course by the same school, and graduation at the end of each, tends to deteriorate the standing of the medical profession.

The Association of American Medical Editors will meet at the Palmer House, Chicago, on Monday evening, June 4th, 1877, at 7.30 o'clock.

All Medical Editors are eligible for membership, and are cordially requested to be present and participate in the meeting.

The Sanitarian.—"Whoever desires health for themselves and children should manage some way to raise three dollars and send for this magazine. Get three dollars by killing and marketing a pig or a calf. It is better to kill a pig, leaving one less in the sty, than to suffer your children to die through ignorance of hygiene, leaving one child less in the family."—*Wine Dealers' Gazette.* Which sentiment we entirely endorse. And, moreover, we respectfully invite the attention of

Subscribers in arrears to a convenient form in our advertising pages, as being equally well suited to them as to new subscribers, which they are **particularly requested to fill and forward without delay.**

Books and Pamphlets Received.—Mahan's Critical History of the American War; Proceedings of American Philological Association; Wey's Medical Aspects of Drunkenness; Assainissements de la Seine-Epuration et utilisation des Eaux d'Egout; Lent's Mounds of Florida; Field on Public Health; Lattimore's Water Supply of Rochester; Culyer's Industrial and Inventive Drawing in Public Schools; Census of R. I., 1875; Parkes' Public Health; Maryland Medical Journal, Vol 1, No. 1.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. JULY, 1877. NO. 52.

NEW YORK "PUBLIC CHARITIES AND CORRECTION."

IS THE CONNECTION OF CHARITY WITH CORRECTION, IN NEW YORK CITY, BENEFICIAL? WHAT SHOULD BE THE POLICY OF A GREAT CITY TOWARDS ITS POOR?

BY SAMUEL A. RABORG, M.D.

Proceedings of New York Medico-Legal Society, March 7th, 1877. Prof. F. H. HAMILTON, M.D., President, in the Chair.

When emigration brings a number of settlers to any one point, they naturally band together: in the first place, for purposes of trade and the ordinary amenities of life; and secondly, for mutual protection against those who are viciously disposed, in one way or another, to infringe upon the rights of their neighbors. There is also in every community a certain percentage of the people who are, through physical disability, mental inaptitude or other causes, unable to provide for themselves. These are entirely distinct from the last class. They are the ones who are ground down by the unjust wheel of misfortune or circumstance, and these also *are to be provided for.*

In looking back through the dim vista of over two centuries, we find that on the 2d of February, 1657, the first charter for this City of New York on record was granted by the Dutch Government to the few thousand people who originally came, principally from Holland, and started our present metropolis on the lower portion of Manhattan Island, and in the immediate vicinity of the Battery.

This charter, however, was very limited and imperfect; the most striking feature of it was the division of the inhabitants into "great and small citizens." The former included the members of the government and their descendants in the male line, ministers of the Gospel, etc. The latter, all who "resided within the city during a year and six weeks, and kept their fire and lights."

In the year 1686 we find that George the Second, by the grace of God, of Great Britain and Ireland, King, defender of the faith, etc., issued the following:

"To all whom these present letters shall come, greeting. Whereas, on the 22d day of April, in the year of our Lord one thousand, six hundred and eighty-six, Thomas Dougan, the Lieutenant-Governor

and Vice-Admiral of New York and its dependencies, under our predecessor James (the Second), then King of England, did make and execute a certain grant, etc."

This charter goes on to speak of New York as "an ancient city, and body corporate, possessing divers lands and franchises not only from the English, but from several Dutch Governors, while the province was under their jurisdiction." After giving several sections devoted to municipal authority, we find the original power vested in certain officers to have charge of criminals and paupers—they read as follows: "And further we do for us, our heirs and successors, grant unto the said Mayor, Aldermen and commonalty, and their successors forever, full power and authority to erect and build, or appropriate any other buildings already built, for one or more bridewell or bridewells, house or houses of correction, and workhouse or workhouses; together with full power and authority to the said Mayor, Recorder and Aldermen, or any one of them, to take up and arrest, or order to be taken up and arrested, all or any rogues, stragglers and idle and suspicious persons; and as they, the said Mayor, Recorder or Aldermen, or any one of them, shall see cause, to order all or any such rogues, vagabonds, stragglers and idle or suspicious persons, either to the said workhouse, there to remain, and work such work, and so long, not exceeding forty days, or else to bridewell or house of correction, there to receive such punishment, not extending to the loss of life or limb, as the said Mayor, Recorder and Aldermen, or any one of them, shall think fit. And also that they, the said Mayor, Aldermen and commonalty, and their successors forever, may, and shall have power to build, erect or appropriate any of their buildings already built for an almshouse, for the relief of the poor, together also with as full and ample power to them, and their successors, to order, direct, and act in and about the said houses of correction, workhouses and almshouses, and the persons to be put in and ordered there, as to any city or corporation in any place of that part of our realm of Great Britain called England, and the officers or ministers thereof, doth or may belong." Immediately after this, in the same section, power is given to the same officers to have or erect one or *more jails, as necessity requires*.

At this time the good people who framed this charter did not dream that this was to become the metropolis of North America, and one of the largest cities of the world.

So, for nearly two centuries, from 1686, when Governor Dougan, by his charter, gave the supervision of the bridewell, almshouse and jail to the Mayor, Recorder and Aldermen, when with a thrifty Dutch settlement the probability is neither of them was required except in rare instances, until to-day, when the needy and poor of our city far exceed the entire population, years after this charter became a law, the same combination is made of criminals and paupers, under the supervision of the Commissioners of Charities and Correction.

It is our province to enter a protest against its continuance—first, on the ground of humanity; and second, in the light of political economy.

We will first glance at the different forms of government by which

these two classes have been controlled since the organization of the city.

In 1673—thirteen years before the Dougan Charter became a law—the population of Manhattan Island only numbered 2,500 souls.

For a long time after the establishment of the charter referred to, the care of the charitable and correctional institutions remained under the charge of the Mayor, Recorder and Aldermen. In 1778 the city contained, according to Mr. Hugh Gain's Universal Register, about 4,200 houses, and 30,000 inhabitants. In 1800 the population had increased to 60,489. This was one hundred and ninety-one years after Hendrick Hudson, in trading for the Dutch East India Company, first touched the soil of Manhattan Island.

We find in a "Treatise on the Corporation," published by Murray Hoffman, a novel project for raising money to build a new almshouse in 1794. On the 20th day of January of that year, a petition was presented to the Legislature for leave to raise £10,000 by lottery to construct a new building for an almshouse. On the 6th of April, 1795, an Act of the Legislature was passed authorizing such lottery, for the purpose of raising the before-mentioned sum. In the year 1814 the Corporation established the almshouse at Bellevue, upon their own ground. Some time after this period, the number of paupers and criminals of the city having grown in proportion to the population, the care of these institutions was turned over to a commissioner, called the Commissioner of the Almshouse.

It is difficult to trace the course pursued by the early officials of this city, as no reports of their work were published prior to the year 1831. It is at this period, also, that we find the first printed reports of the proceedings of the Board of Aldermen. It is next to impossible to decipher the Dutch MSS.

Moses G. Leonard, Esq., was Commissioner in 1848, and with that year the government of these institutions was changed. In his report he states that the sum of "$403,307.83 has been spent during the last twelve months for their support."

On the 8th of May, 1844, an Act was passed by the State Legislature placing these institutions under a Board of ten Governors.

The first appointed were Wm. T. Pinckney, Isaac Townsend, Simeon Draper, Francis R. Tillow, Jonathan L. Coddington, Wm. M. Evarts, Richard S. Williams, Timothy Daly, Schureman Halsted and Peter McLoughlin. The institutions placed under the supervision of this Board were:

1. The Department of the Outdoor Poor.
2. The City Prisons, three in number, viz.: At Halls of Justice, Centre Street; Jefferson Market, Greenwich Avenue; and Essex Market, Grand Street.
3. The Bellevue Hospital.
4. The Penitentiary.
5. The Almshouse.
6. The Lunatic Asylum.

} Blackwell's Island.

And 7. The Nurseries on Randall's Island.

Also, by the Act passed April 11th, 1849, a workhouse was established and placed under the control of this Board.

In the *last* report of the Governors, for 1859, the net amount paid for the support of the institutions was $597,835.07.

January 1st, 1861, we have the first report of the Commissioners of Public Charities and Corrections. They were appointed under the law passed April 17th, 1860. They were Simeon Draper, Isaac Bell, Jr., Moses H. Grinnell and James B. Nicholson.

In their first report, page 9, they say: "It will be seen that important changes have been made in the general administration of the affairs of the Department, a large reduction has been made in the number of employees, etc., etc. Important changes in almost every institution have been made, affecting their economy as well as their proper government. The Nursery of Infants in the city has been abandoned, and the care of them placed in responsible hands in the Almshouse Department."

By an Act passed May 5th, 1870, this Department was reorganized, and Mayor A. Oakey Hall appointed the following five Commissioners to superintend it, viz.: Isaac Bell, O. W. Brennan, James Bowen, James B. Nicholson and Alexander Frear. At this time there were five general hospitals for surgical and medical cases, besides the Bureau for the Treatment of the Outdoor Sick, and six special hospitals for specific and contagious diseases. The number of patients treated in the general hospitals was 18,919, and in the special hospitals 4,405; total, 23,324. At the Morgue, this year, there were received 174 bodies, of which only 89 were identified by friends.

Again, in 1875, this department was reorganized and placed under the control of Commissioners Thomas Brennan, Isaac H. Bailey and Townsend Cox. By their report for that year, "The city charitable and correctional institutions had an average population of 10,664," and "62,395 persons were relieved by the Outdoor Department."

From their condensed statement of expenditures for the year, we find that for the support of these institutions, repairs, etc., they spent $1,286,206.66.

It is easily seen by these figures to what magnitude these classes have grown.

Outdoor Sleepers.—An immense sensation was made in London some years ago, when some philanthropist discovered that at least one hundred persons, hungry, destitute, and almost naked, slept each night in the private parks fronting the elegant mansions of the rich. Still this can be seen every night in our city by any one who will pass through Madison or other squares after eleven o'clock. And these poor, desolate wretches have no place to resort to in this great city but to the station-houses.

Some two or three years ago I went down town after midnight, and with a pass from the Police Department saw the true state of these night lodgers, and it is difficult to picture the reality of their condition. In one station-house I found the men so densely packed together on the floor that they absolutely covered it—it could not be seen at all.

In another, a captain pointed me out a cell where he had allowed a poor woman and two children, who had been forced into the street by a drunken husband, to remain all night, as "he felt so sorry for her," and the cell was so much more comfortable than the lodgers'

room. There is no question that a great many of these people are not deserving, that they are confirmed vagabonds, tramps and petty thieves; but all such should be arrested and placed in the workhouse and forced to make an honest living. But this is no reason why the truly poor and unfortunate should be neglected. From the Police Report of 1875, we find that there were during that year two hundred and seventeen thousand, five hundred and five who sought this shelter. During the last winter some private efforts were made to supply this need; but we shall eventually have to do as they have done in London: by private philanthropic efforts erect night lodging-houses in certain districts where they are most needed, with appurtenances for cleanliness; where proper discrimination can be used; and where those who are really the children of misfortune may find a place to rest their weary bodies for a night in peace and comfort. Surely the familiarity with the station-houses brought about by the present system must have a most unfortunate influence not only on the truly deserving, but particularly on those who have only taken the first steps in the downward path of crime and dissipation.

The Poor and the Vicious.—These pictures may seem exaggerated, but few persons in this great metropolis are aware of how intimately criminals are thrown with the poor in many of our public institutions. On Blackwell's Island a young, innocent girl may occupy the next bed to a woman who represents the worst and most degraded class of her sex to be found in this city. Much of the menial work at Bellevue and Charity Hospitals is done by women and men committed to the workhouse for intoxication and other offenses.

Some of the nurses are or have been confined in the same institutions. And worst of all is the association of these buildings for reformatory and charitable purposes on Blackwell's Island felt by the honest poor. It is a fact well known to every physician in this city, that the majority in this class will starve on a bare crust of bread in a miserable tenement, rather than go to this much-dreaded island. When Dr. W. W. Sanger was appointed Resident Physician to the Charity Hospital, or, as it was then termed, the Penitentiary Hospital, he reported that "in the year 1854 there were 3,734 admissions. Of these, debauch and delirium tremens furnished 35 per cent. of the gross number, and 37 per cent. was due to syphilis. It will thus be observed that 72 per cent. of all cases under treatment were directly caused by the lowest and foulest kind of dissipation and vice." In a protest he made to the authorities, of this combination of the sick with criminals, we find the following: "Is it necessary, or must it be, that human beings laboring under the effects of drink, syphilis, ulcers and all forms of disease, while being medically treated, shall undergo a process of being made into thieves, to prey on the community when discharged?"

We all know that when a person is poor, friendless and an outcast, he must at times have feelings of antagonism against his more fortunate fellow-beings. When in this condition, desperate, despairing, and apparently God-forsaken, can anything be more pernicious than to place him in contact with and under the influence of criminals—those who are corrupt in nature, vicious in propensities, and deliberately defiant of all laws of God and man? Every instinct of humanity, every throb of

the great heart of charity, every impulse of the noble men and women who devote themselves to the amelioration of the misfortunes of their fellow-beings, must be averse to this connection; the principle is wrong, and but begets criminals.

The true political economy here, would surely be to elevate these people by showing them that there is nothing degrading in being unfortunate and poor; to stimulate them with a noble desire to work and do for themselves; to surround them with elevating and refining influences—in other words, to make them *producers instead of consumers.*

What Should be the Policy of a Great City Towards its Poor ?—This is a question that has been agitated by the greatest humanitarians, philanthropists and politicians for centuries past in Europe. Let us then first glance at the systems now in vogue in the two most noted capitals in the world to-day, for humanity, civilization and culture—viz., London and Paris.

In the former city, London, for six centuries, different charitable institutions have from time to time been endowed by opulent citizens, under the English law of bequests.

There endowments are considered so sacred, that no person can disturb or alter them. Some of them have grown to enormous proportions, by the advance of real estate and the gradual accumulation of interest. As a rule, they have been placed under the control of Governors or Trustees of such character as the donor dictated in his bequest. London, at the accession of James the First, was said to contain little more than 150,000 inhabitants.

Before the Restoration of Charles II, in 1660, says Sir William Petty, "the people of Paris were more than those of London and Dublin put together; whereas now (1687) the people of London are more than those of Paris and Rome." In 1682 there were about 670,000 souls in London; in 1801, 864,845; and in 1841, 1,870,727. In 1843, according to the work by Charles Knight on London, there was at that period an annual income of £310,000 a year in London alone, from the bequests left by generous donors for the various city charities, and, "altogether, there is a total of upwards of £384,000 of the annual income arising from property in the Metropolitan County, which is devoted to purposes of charity and education." "When Lawrence Sheriff, grocer and citizen of London, left the third part of a field of 24 acres in the parish of Holborn, for the endowment of a grammar school at Rugby, it produced only £8 a year. This field was called the 'conduit close,' and was nearly half a mile from any house. It is now covered with buildings, and the rental exceeds £10,000 a year." The almshouses in England are intended as asylums for the aged and infirm. Mr. Knight says: "The almshouses in London are probably not far short of one hundred and fifty." These are chiefly maintained by endowments left in trust to city companies. It must be remembered, however, in speaking of so large a number of these institutions, that they, as a rule, contain accommodations for very few persons, and were founded by trades or guilds for the use of their own brethren. The Drapers' Almshouses are amongst the earliest foundations of this kind, started in 1522.

In 1593 the merchant tailors erected seven almshouses for fourteen

poor widows on Tower Hill. The result of the promiscuous character of so many charitable societies in London is, however, keenly felt. A story is told of a widow who availed herself, by intrigue, of placing an entire family of children in the different orphan asylums, when she was more than amply able to provide for them herself. These are the London Orphan Asylum, the Female Orphan, the British Orphan, the Infant Orphan, the Orphan Working, the Sailors' Female Orphan, the Merchants' Sailors' Orphan, the Incorporated Clergy Orphan, and the Army Medical Officers' Orphan. There are five Royal Hospitals, commonly known as such, and designated, "'The Royal Hospitals of the City of London,' under the pious care of the Right Honorable the Lord Mayor, Aldermen, and Governors thereof." They are—St. Bartholomew's, Christ's Hospital, St. Thomas', Bridewell and Bethlehem. There are twelve general medical hospitals in London, including the above; the most of them have been endowed by rich and charitable persons. The total income of St. Bartholomew's Hospital, in 1850, was £32,000, while in 1544 it was dependent upon an income of only £371.* One of the most remarkable instances of generosity known to the world, was the establishment of Guy's Hospital, Southwark. It was founded in 1724 for sick and diseased poor persons; its accommodation is 580 beds. Some 50,000 persons receive here annually medical relief.

The Lunatic House is a department peculiar to this hospital. The usual number of patients is from twenty to thirty, as provided for by the founder. They have spacious grounds for their use behind the hospital. This establishment was founded at the sole cost and charges of Thomas Guy, Esq., a rich bookseller of Lombard Street, who spent upwards of £18,000 on the buildings during his life-time, and endowed it with the sum of £210,429—the largest sum that has ever been left by an individual to charitable purposes. In 1829 Mr. Hurst, a gentleman residing in Petersham, left £200,000 to the same hospital, stipulating for a provision of additional accommodation for 100 patients. Mr. Low, in speaking of the London charities, says: "It only remains for us to premise, that institutions of a minor character, but kindred in design to the foregoing, are constantly making their appearance before the public, under slight variations of title and claims to support; proving often, however, to be attempts only of individuals either for the development of peculiar systems of treatment, or for the extension of fame and practice." According to the same author, in 1850 the population of London was 2,200,000, and from them the twelve general medical hospitals had an income derived from voluntary contributions of £31,265, and an income from funded property or otherwise secured of £111,641. There were fifty medical charities for special purposes, with voluntary contributions of £27,974, and from funded property, £68,690. There were thirty-five general dispensaries, with voluntary contributions of £11,470, and from funded property, £2,954.

The entire amount devoted to charity that year in London was, by voluntary contributions, £1,022,864, and from funded property, £741,869. This, of course, includes asylums for orphans, houses for

* "Charities of London." Sampson, Low & Co.

the aged, school societies, Bible and missionary societies, etc. On the 31st of March, 1840, the House of Commons ordered a digest prepared of all the charities of the United Kingdom; this was published in parts by John W. Parker, of West Street, in 1843. In the report of the Commissioners who performed this labor we find: "In preparing this (third) part of the return, it has been presumed that the object of the order was to obtain a summary of those charities which are, or may be liable to be, distributed indiscriminately amongst the poor (the evil tendency of charities of this description having been frequently the topic of observation)." With this array of institutes, I desire to say a word about the prisons of London. They show the same miscellaneous character as the charities, and, from the same system of bequests, are so differently governed with regard to severity of discipline, that it is said it is difficult for the judges on circuit in England to know for how long a period to condemn a criminal to prison, as two weeks in one is frequently greater punishment than two months in another. For instance: Coldbath Fields Prison or House of Correction, in the Parish of St. James, Clerkenwell, between the Church and Gray's Inn Road, is under the jurisdiction of fourteen magistrates, appointed at each quarter sessions, of whom four go out quarterly by rotation. It is for criminals from all parts of the County of Middlesex. The number confined here is in the neighborhood of 12,000 annually. The discipline enforced is that called the "silent system," the prisoners working in bodies, and silence being preserved by great vigilance on the part of the officials. The convict is not allowed to receive a letter during the first six months of his incarceration, and after that only one letter a month. Some of the prisons in London, to the contrary, are very lax, allowing card-playing, idleness and beer-drinking. Some are under the charge of one or more Governors, and others directly controlled by the Lord Mayor and Aldermen. This depends greatly upon the character of the support of the institution; as, for instance, Bridewell, within the city of London, is under the jurisdiction of the Governor of Bridewell and Bethlehem Hospitals, and is supported out of the funds of these hospitals.

The nursing in the English hospitals is peculiar. Some few are in charge of religious orders, but the majority are cared for by hired help. An innovation of late years is to make a character of sisterhood in each establishment. When a woman first applies for the position of nurse, if she is of proper character and brings good references, she is made an assistant; this position she occupies with a stated salary for two years. At the expiration of that time, if she has served satisfactorily, she is made a full sister, with increased compensation, and two assistant nurses are placed under her control.

In transferring our attention to Paris, we find a very different condition in the public institutions.

In Knight's "Pictorial London," it is stated that in 1840 one-third of the deaths in Paris occurred in the hospitals (or 9,338 out of 28,294); but in London, the same year, the proportion was only one in nineteen (or 2,358 out of 46,281). Knight says: "The domestic feeling or prejudice, if we like to call it so, of the English people, is generally adverse to that public association which is inevitable in an

hospital; but in reality there is a great deal in the fact that although the London hospitals are so numerous, their capacity is very limited, and on every 'taking-in day,' a large number of persons are unable to obtain admission."

The truth really is, that the hospitals of Paris are differently conducted. In the early days of that city, private parties endowed some institutions of the same character of those found in London, but the monster, Revolution, has so many times swept over the face of that most beautiful and attractive city of the world, and at such times entirely disregarding law and the rights of property, that we find to-day a very wise concentration and arrangement of the institutions of charity; probably not akin with the intention of the original donors, but much more beneficial for the recipients of their bounty. By a decree of the French Convention, passed July 16th, 1793, part of the patients of the hospitals of Paris were transferred to convents, or other structures which had become national property. By subsequent decrees, the superintendence of hospitals was vested in sixteen members of the National Assembly. By a decree of January 10th, 1849, everything relating to public assistance has been placed under a special administration called *Administration Générale de l'Assistance à Paris.* It is under the control of the Minister of the Interior, and is managed by a Director and a *Conseil de Surveillance* of twenty members, presided over by the *Prefects of the Seine and of Police.* There are in France 1,333 hospitals, the revenues of which amount to 53,662,992 francs. For the year ending December 31st, 1854, in the general and special hospitals, there were admitted 68,863 medical and 25,952 surgical cases. There were 10,479 deaths in the medical wards, and 1,312 in the surgical wards. In 1854 the net receipts were 14,894,220 francs; expenditures, 16,047,037 francs; deficiency, 1,152,817 francs. Paris' annual contribution for that year was 267,397 francs.

It will be a surprise to many, to hear that so large a proportion of the deaths of Paris as one-third occur in the public hospitals, while in London only one of every nineteen takes place in these institutions. Two causes, however, account for this. In the first place, the people of these two capitals are very different in their tastes and inclinations as regards home life. The Parisians live largely in the streets; they are fond of congregating together, and of fun and pleasure.

The Londoners, on the contrary, care more for their own hearthstone. No matter how poor the artisan or mechanic, he tries to have a roof of his own. The difference in climate no doubt has much to do with these peculiarities of the two races; but more than this is the great difference in which these institutions are regarded in the two cities, and the vast dissimilarity in their management. The Parisian loves the hospital, be he rich or poor. If of the former, he gives freely of his means towards its support; if of the latter, he looks forward to it as a safe refuge when his days are to end by disease and suffering, when his every want will be ministered unto by the gentle hand of the patient sister of charity, and where his soul can leave its earthly tenement in peace with God and man. The Londoner, on the contrary, regards these institutions as a *dernier ressort* for the outcasts

and unfortunates of society, and gives to them as a matter of necessity or duty.

In this connection it is well to say a word in approbation of the noble self-abnegation, the untiring devotion, the patience and gentle kindness of the noble women who band themselves under church organizations to devote their lives as nurses in these institutions.

Every one who has had any experience on this subject knows the infinite superiority of these ladies over hired nurses; and this is natural, as the first do their work without compensation, and for love of the Great Master, while the others are simply stimulated by the miserable stipend they receive monthly for their labor. In this country, so far, the sisterhoods under the Catholic Church have done noble work; at St. Luke's Hospital an Episcopal sisterhood has proven most effective; and the recent action of Mayor Wickham and others, in establishing the school for training nurses, cannot be spoken of with too much commendation, as they have rendered a great service to the city and to humanity.

I have detailed the statistics of London and Paris to see what information we can gain from them, for the guidance of our future towards these unfortunate classes.

We are young as a city compared to either, and still our growth is apparently to be as rapid, and probably, from present indications, as gigantic, as either. From the points I have given you, it will be seen that in London in 1850, with a population of 2,200,000 souls, £1,764,733, or about $8,541,407.72, were spent for the support of all these classes; while by the Report of the Board of United Charities for 1877, we, with a population of something over one million, spent $5,588,000 for these same classes, and in this report the expenses of several institutions are not given, so that we might estimate that at least six millions of dollars were spent in this city last year for those purposes. This, then, is already very much in excess of the expenditures in proportion to London.

Is it not wise for us to hesitate here, and think of the future ?—History in all ages has proven that the pauper and criminal population of a country grow with its growth. Would it not be noble for us to adopt a plan by which we would have a less percentage of these classes than other countries? Would it not be a grand illustration of the working of our Great Republican country, to show that we have raised the poor, the unfortunate and even the vagrants to become honest, hard-working citizens? How is this to be done? In the first place, let us separate crime from poverty, by appointing one Commissioner of Charity, and placing the department of corrections where it belongs, in the hands of the police authorities. This commissioner should be assisted by a council of gentlemen from different religious denominations or philanthropic societies, say of twelve members.

There are plenty of these who would serve in such a position without compensation.

This commissioner and these gentlemen should be appointed for their fitness for the position, and without any regard to their political affiliations. In no large city of the world are the charities hampered as they are here by political considerations. At the fifth annual

meeting of the State Charities Aid Association, held on the first of this month, a report was submitted which stated: "The Association *prays* for the removal of our pauper hospitals from political influence. In Bellevue Hospital the proper distribution of supplies is neglected, and the drugs are so bad in quality that their medicinal qualities cannot be counted upon. In some wards of Bellevue Hospital potatoes were given last fall but six times in two weeks, the condensed milk was often so watered as to furnish no adequate nutriment, and there was a constant deficiency in bed-linen." When we see by the report of the Board of United Charities for the last year that $120,874.73 were spent on this institution, the above seems incredible. The fifth annual report of the local visiting committee for Bellevue and other public hospitals of the city of New York states: "The administration of the Department of Public Charities and Corrections has properly nothing to do with politics; yet, like every other department of the City Government, it is simply a political machine.

"There is not an appointment, from that of the commissioners to the lowest subordinate, which may not have a political significance, and while this system lasts the results must be the same." Further on the report states:

"When the citizens of New York determine that their public charities are not to be managed with reference to partisan politics, but on enlightened philanthropic principles, we shall have the right administration, and not till then." These expressions, coming from noble men and women engaged without compensation in this work, should receive proper consideration. As long as this condition lasts, we will have the same miscellaneous character of charities as to-day exists in England. How is it to be expected that private persons will leave fortunes in the hands of politicians to disburse, knowing well it will be used for partisan purposes? How much better and more economical for their future distribution, to establish a non-partisan and philanthropic management for these institutions, which will at once command the confidence of those who desire to bequeath means for such purposes. Of course private beneficence and generosity cannot be interfered with, and should not be, particularly in a free country like ours; but much can be done to utilize this, to educate the benefactors, who are generally engrossed with business cares and anxieties, as to the true policy of disposing of their charities. There are surely enough gentlemen in this city who have already demonstrated their disinterested devotion in this cause, and who are allied to no political rings or cliques, to select a commissioner from—such men as Mr. Henry L. Hoguet, Mr. Theodore Roosevelt and Mr. Henry E. Pellew, and others of this kind, would give universal satisfaction.

In the parishes of England a rule is adopted which should be in vogue here. At every poor-house a register is kept of the poor of the district, and if they wander off and apply for assistance in another district, they are returned to be taken care of at their original homes. If this system were adopted in New York, it would save much time and trouble. There is a dispensary in almost every district in the city: if these institutions were obliged to keep a register alphabetically arranged of their own poor, much better facility would be given the

authorities to get at the truly deserving. In this connection it would be necessary for this commissioner and his council to have full power to investigate at least twice annually all local charities receiving money from the city.

It is very evident, after the developments recently made, that all local charities receiving money from the excise or other funds should be under the supervision of some absolute authority.

Such charities should be required at least semi-annually to show their books and the general working of their organization to a committee appointed for this service.

Furthermore, unquestionably those who are doing an honest and philanthropic work will court this inquiry, as it would give the result of their labors to the public, and thus increase their donations from charitably-inclined citizens.

And again, no new charities should be started in any section of the city, if they expected to receive municipal assistance, without the consent of the commissioner. There is a great deal of money spent in unnecessary institutions. If a dispensary is in a certain district and has a house already rented, books containing the names of the poor of the district, and other necessary conveniences, why start another charity around the corner, or in the next block, which could be coalesced with the first with great benefit, and with a decided saving of the money intended for the poor?

"I scruple not to affirm," says Howard, the great philanthropist, "that half the robberies committed in and about London are planned in the prisons by that dreadful assemblage of criminals and the number of idle people who visit them." This is most plainly shown in our city. Young persons, the victims of indiscretion or misfortune, come in contact with those who are confirmed thieves, vagabonds and criminals. What is to be expected from such? Who cannot picture their future?—taught by those vile associates that it is easier to steal than to work, insidious arguments plied to them that it is more distinguished, more honorable, to be gentlemen of the road, sneak thieves and villains, than to be honest, hard-working citizens. Whom have we to blame but ourselves, for the increase of the criminal classes, when we throw the young, the weak, the homeless, and the most pliable portion of our population, into the position which almost forces them to ally themselves against law, order and society? Much of the improvement in Newgate and other prisons in London is due to the noble efforts of Miss Fry, who strenuously and for years devoted her time to preventing the association of young women incarcerated for small offenses and indiscretions with hardened criminals. All annals of such institutions which have existed in civilized times prove the frightful result of such a connection, and every philanthropist who has ever inquired into or written on the subject, has pointed out the frightful folly of allowing such association.

We are at present promised a more economical arrangement of our city departments by the Legislature. May we not hope that they will draw a wide line of demarkation between criminals and paupers?

Confining the truly vicious by themselves; placing tramps, drunkards and vagabonds in the workhouse, where they will be obliged "to earn their bread by the sweat of their brows," and, last of all, teach-

ing the poor to look upward to a better state, encouraging them to earn an honest livelihood and become useful citizens. With this accomplished, we would have attained a higher scale of civilization than has yet been reached, even in this much-vaunted nineteenth century.

Political Influence.—Hon. SIMON STERNE said: While the reader of the paper of the evening has stated many truths, and has enlightened us upon numerous historical facts, there are also many vital questions embraced in the subject under discussion which deserve consideration by all thinking men. He has touched upon many questions which appear to have the highest interest; and especially has he alluded to the well-known fact, that the administration of the department to which he refers is more or less hampered by political interests; and the man who undertakes, as I can say from experience, to free himself from political influence and act independently in his work, will very likely be the victim of persecution. Besides the difficulty last alluded to, there are likewise on the statute books many very defective laws which prevent the proper treatment of that class of people who inhabit institutions like the workhouse and the almshouse. A very large number of these unfortunate individuals cannot possibly be advantageously employed. That is to say, they cannot be contracted for to do work which will produce a revenue more than sufficient to cover the costs of their maintenance. I am free to say that both the workhouse and the penitentiary—the one costing the city something like $75,000, the other $300,000, per annum—can very easily be made to pay their expenses by the labor of their inmates, provided the law would not forbid it. When you come to alter the law, you will see that the same pernicious political influences will be brought to bear in what are generally termed "Trades Union Societies," the members of which hold that the production of articles in prisons by the inmates interferes with legitimate labor outside the prisons; and further, that it interferes with the revenues which ought legitimately to flow into their coffers. If those great pauper institutions on Blackwell's and Randall's Islands—the workhouse especially—in which the largest number of strong, healthy, vigorous women are confined, could be properly managed, they would not only be self-supporting, but their being so would be an immense relief to the taxpayers of the city of New York. If proper laws could be enacted, and proper governmental control could be attained, there is no question about it.

That the criminal should be separated from the simply poor, or rather, that the prisoner young in crime should be separated from the confirmed criminal, is too patent a fact to require reiteration. I have, in one of my reports, alluded to the fact that both classes are kept in these institutions without employment, because it is impossible to employ them as they should be employed. They are merely kept there, so to speak, in order that they may not run away. The workhouse contains from 1,600 to 2,000 inmates, on an average, and it is very natural to consider that they cannot all be occupied under one roof; first, because, when I was there, I found three classes of persons—the unfortunate lunatic, who has no business there, the criminal, and the poor. When we designate this

classic institution by the term "workhouse," we make a grave mistake; those who resort thereto come nearer the truth—they call it by its proper term, the "house of rest;" and it is only to satisfy the people at large that the term "workhouse" is employed at all.

Out of these 1,600 or 1,800 paupers, 150 are detailed to do work among other institutions. I know of forty-six being sent to the inebriate asylum. The others are distributed to various other institutions. Instead of these persons earning their living, they are a double expense. These workhouse inmates are recruited from those who are arrested for minor offenses, and committed by police magistrates within forty-eight hours after their arrest. The old regulation, I believe, used to be within twenty-four hours, but it has been changed in recent years. When they arrive at the Island, they are presented with a new suit of clothes, their old ones being destroyed; otherwise, the number of inmates would increase, instead of decrease, to a very rapid degree; and in about ten to thirty days the unfortunate is relieved from "duress vile," and allowed to retire again into private life. Now the time of confinement is too brief, in my opinion, in comparison to the expense incurred by the city. But there are many things scarcely to be believed to exist in our civilized age, and much, very much, could be done in the way of healthful reform, provided the management were not hampered by political patronage. As the gentleman has stated, there may be very many worthy citizens who might be induced to accept the position of commissioner without pay, but I think that at the end of about thirty days they would ask to be relieved. In some instances the plan of making a division of charities from corrections might work well, while in many instances it might not. If commissioners were clothed with proper discretionary powers to extend charity to the worthy, it might be the means of saving many a person who had but just entered into crime.

I could relate several instances where, if the two classes had been separated, many would ultimately have been reclaimed from their evil ways, and would not be likely to desire to enter again into such a life. I could name one party in particular which I happen to recall, to whom I had the pleasure of extending the kind of discretion spoken of during the course of my official life, who, had she been sent by the Commissioners of Charities and Corrections to associate with the vile, would certainly have been irretrievably ruined. She was a young girl who had been brought in with other females arrested by the police for the crime of "soliciting" customers; she was apparently about seventeen years of age, very beautiful in figure and face.

A person coming in contact with these characters, can tell in an instant the hardened from those who are not. When she first came before me she could not speak, but after a little, recovering her voice, the first thing she said was, "Oh! my poor mother." Now I feel very well convinced that the boy or girl who, in all their dissipation and fallen condition, yet is able to recall the name of "Mother," is not past all hope of reclamation; and I have discovered also that most of these unfortunate characters have yet naturally an innate secret consciousness, which, if touched at the right moment, would work a saving grace. I believed this to be such a case, and I asked her how she

came to be in the city. She told me her story, which is but the "old, old story," after all. Like many others, she lived in a neighboring city in Massachusetts. She worked in a photograph gallery, in which was also employed a young man whom she believed she had married and was true to her. Of course he deceived her, and having brought her to this city, abandoned her. I asked her if she desired to return home. She answered that she did, provided her mother was not told of her condition. She was in the worst stages of a loathsome disease. If she would only return to her parents, she would be happy. I took her to Mrs. Foster, the matron of "The Tombs," and I sent for Mr. Warden Brennan of Bellevue, now Commissioner Brennan, and begged him to place her in a separate room, and find out whether the facts as stated by her were true. Mr. Brennan did as I requested, and having placed her in charge of the physicians at the Hospital, in the course of a few weeks she was restored to health. When notified, her mother sent her promptly ten dollars, and said that if her daughter was very sick she would come on to see her.

Well, to make a long story short, she finally recovered, and was sent to the railroad depot in charge of an officer, and she returned home. She not only returned home, but, as I learned afterwards, she has since married well, and lives a good, respectable and respected woman in her native village.

I could cite you a dozen similar cases among men and women, to show that charities ought to be separated from corrections, but perhaps I have spoken sufficiently on this point.

That there is no question about it, that the system of charities and corrections should be and can be materially changed. To continue to confine people in the same manner as they are now, is not only wrong, but is ruinous not only to the present population, but to future generations; for it is a fact proved by the records, that of those arrested for intoxication, the greater proportion by far are females; the proportion exceeds sixteen to one—sixteen females to one male. However astounding that may seem, it is nevertheless a fact. I do not mean to say that sixteen females are arrested to one man, because the same female may be arrested sixteen times, and each time she will appear on the records, so that there may be in reality an equal number of males and females. Now if these young and tender girls are continually thrown in the company of these hardened females, you will readily imagine what the morals of the rising generation will be. Therefore I say it not only affects the present population, but the future generation will be very little better.

These evils can no doubt in time be eradicated, and by furnishing these inmates proper employment, and, as I have before intimated, by keeping those sent up on the Island, not for ten to thirty days, but for twelve months, until the authorities are perfectly satisfied that the disease is perfectly eradicated, so that the prisoner, when he comes out, will not run to the first grog shop, as he does now. The time is too short for these depraved females to be reformed; but while the present defects of the law remain, the difficulty of executing the law by competent persons, in the face of political interference, is very great.

Foreign Hospitals.—Dr. R. R. McIlvaine remarked: It is

true that with us there is a greater opportunity for a display of interference politically than there is elsewhere; but if our civil politics interferes with our system of charities here, religious politics in England certainly interferes in that country.

The first English hospital founded, as far as I know, was the St. Bartholomew. That was in the twelfth century, in the year 1123, at the instance of Rayhere, the minstrel of Henry First. After the Reformation, when Henry VIII became successor to the Pope, on the 3d November, 1534, at the instance of the Mayor of London, there was more provision made for the poor and unfortunate than had been formerly.

Guy's Hospital is an important institution, which was the result of private enterprise by that excellent man who founded it at his own expense.

That hospital, however, is essentially under the control of church influences, as they all are, which is more baneful, as a matter of course—as much so as our political influences. Dr. Hodgkins was excluded from that institution simply because he wore the simple garb of George Fox—he was a Quaker; and in the St. Thomas Hospital at the cry of the Church of Rome deprived a good man of his election.

These influences could not probably interfere across the channel to the same extent as they did in England. In Paris the Hotel Dieu bears date 653, and was founded, as the act of incorporation reads, "For all nations and all religions." Why was it founded "for all nations and all religions"? Simply from the fact that in that day the nations surrounding were worshipers and adherents of their own religion, the Saxons not being converted to the Christian religion until some time before Charlemagne died, January 28th, 814.

Our friend speaks of the French people as being a pleasure-loving people, and that they live out-of-doors. Whether they are a pleasure-loving people or not, their city is the world's city, and they are always found engaged in some productive pursuit—they are people of industry, as their recent history demonstrates. They have made more provision for the poor and unfortunate than any other people with whose records we are familiar.

As to their climate, the mean temperature of Paris is 51.8°, while that of London is 50.36°; of course that shows some difference. But when the doctor states that they reside for the most part out-of-doors, he shows that he is not personally familiar with their manner of living. It is a city of strangers, who go there for the sole purpose of not only finding pleasure or the means of pleasure, but for instruction. There are halls of science, there are hospitals, there are facilities for improvement in Paris, which can be found nowhere else. Hence the stranger, or those who are superficial observers, who are themselves on the go, searching for pleasure, assume that these French people are doing likewise, while the French people are in reality engaged in scientific research and literary pursuits (that is, part of them), while those who are producing wealth are engaged incessantly in that department of industry.

Their hospitals are conducted on such a plan, that all persons are admitted without question. Should any of us, Mr. President, be so

unfortunate as to be taken sick in Paris without means, and we are able to go to the hospital, the question will be asked, *Voulez-vous entrer?* You are not interrogated, By what authority? but you are asked in, and after you are there, your name is taken and your antecedents inquired into. What a contrast with what I heard a gentleman—a professor—state as his experience one day at St. Bartholomew. A patient presented himself for treatment. The professor in attendance asked him where he came from. He told him the county. Thereupon said the professor, "Why didn't you stay there; why do you come here?"

Another thing is to be taken into consideration with us, and that is as to the position of the doctors. The doctors are degraded by serving under such men as control our benevolent institutions in this city. These institutions, known as dispensaries, are under the control, as I understand, of gentlemen who are not physicians. Hence they are not proper judges of the qualifications of persons who are to occupy professional places in connection therewith; but, as I understand, the appointments are effected through influence, the same as at Guy's Hospital. Religion controls. Hence the young men who are struggling into professional existence are received without compensation. But whether they acquire honor for the future or a competence from these means is still an open question.

Now let us contrast these things with the French method. In France 2,167 physicians and surgeons receive, for attendance upon the poor, the sum of 817,497 francs. That fact at once places the physician in a condition where his services are recognized. It is true, should they not be found adequate to the discharge of the duties to which they have been assigned, they can be discharged; but you will notice in this that there is a recognition of these gentlemen by compensation, and though it may be considered small, yet there is a principle connected with it which we in this country have not yet adopted.

The paper takes note of the large number of persons in France who die in public institutions—in hospitals. If we contrast this with the hospitals of London, we find that in 1856 there were 56,786 who died in that city. Nearly one person out of every five who died in that year closed his days under a roof provided by public law or private charity; and for these facts, I give as my authority the report of Dr. William Farr, dated January 20th, 1857, and these figures speak for themselves; and it is a subject on which it gives me great pleasure to dwell, because I am fortified with facts and data.

It is evident that our distinguished colleague (the author of the paper) has not been personally familiar with the working of these institutions either on the continent or in the neighboring island.

It was remarked by Mr. Rue, in his visit to England in 1816, that a great defect then was the want of a centralization of the charities. In France the whole system is under one superintendence, and it has been found to be an admirable improvement. The ameliorations in favor of the poor and unfortunate in France are the outgrowth in a great measure of that great development resulting from the old great Revolution of 1789. That must be considered the starting point for the ameliorations in the hospitals, for in the days of Louis XVI, the

Hotel Dieu, according to references made when Franklin was there, shows great defects in provisions for the poor. But with the inauguration of the Republique, which produced so many great men, the condition of these institutions was ameliorated; and though it may be said that they had their defects, yet these defects were secondary, compared with the glorious results it produced.

Dr. RABORG said he appreciated the weight of Mr. Sterne's remarks. The authority of his statements cannot be surpassed in this city, because, he presumed, very few men in this city have given the attention to matters of charity which he has, an attention to matters of philanthropy which has not been bound by political conditions of any kind; but he must say, and say it squarely and strongly, that Mr. Sterne, in his opinion, is wrong. This same theory, this same plea, which he urges with regard to the

Unfortunate Women who appear not one day, but every day, in every police court in the city of New York, and will continue to appear, not always from some village in Massachusetts, but from every State and every hamlet, and who gravitate to the large cities of the country for the purpose of losing themselves in the general crowd; and the police magistrate can as well show a little leniency and executive clemency as that shown by his most respected friend—he was going to say, but he did not have the honor of his acquaintance.

Mr. STERNE: It is not necessary that the connection of charities and corrections should be made. It is wrong in every sense. It degrades the poor, and it makes criminals out of those who are already weak!

Dr. MCILVAINE. I understand, from the remarks of Mr. Sterne, that the trouble does exist to which Dr. Raborg has alluded—namely, that there is a commingling of the criminal classes with those less depraved on the Island, and more especially and to a great extent at Bellevue Hospital. I would like to ask Mr. Sterne whether he sees any special difficulty in separating them?

Mr. STERNE. I would beg to reply to Dr. McIlvaine very briefly.

The commingling arises from the cause which I have stated. We have from 1,600 to 2,000 persons committed to the workhouse. They are not the same class of persons as those sent to the penitentiary, who are committed there for thieving and robbery. They may at times have committed a great many small offenses. About one-half of them are transferred to other institutions, for purposes of performing necessary duties, such as those in Charity Hospital, the almshouse, the lunatic asylum, the nursery and child's hospital on Randall's Island, for the reasons which I have given, that it is impossible to house them in the workhouse proper; and that is the way in which much of the commingling is effected, not only with the poor in the almshouse, but with the sick in the Charity Hospital and other institutions.

When you ask whether it can be remedied, I have said that it can, by the enactment of proper laws whereby proper employment may be given them. But the law is deficient, and you cannot contract their labor so as to make it productive. What they now produce they consume. Some are employed in the tailor shop making clothes, others in the shoe shop—but they produce nothing which yields a

revenue to pay for the expenses of their support, and for this reason, as I have stated before, they are distributed to the various institutions. The influence exerted by them naturally is bad. But with a proper administration of a proper law, much of this can be remedied. They should be put to some employment where they can earn sufficient to pay for the expense of keeping them. Even in the almshouse they could be put to some useful and profitable employment which will not interfere with honest labor in other States. For many of the shoes that are worn, sold in the city, we get from Massachusetts; and yet their own convicts there are employed. The best institution in this country is the Troy workhouse. It not only pays, but I believe it has made $101,000 over expenses in one year. Mr. Pillsbury, in Albany, makes the penitentiary pay at the rate of $25,000 over the expenses of the convicts. And affairs there are so well managed that it does not look like a prison. There is a system there. But he is free from political influence. He has no assistant there who is not competent to do his duty.

Hon. FRANK SHERMAN SMITH said that he heartily endorsed the paper of the evening in what was said regarding the

Benefits to be derived from separating honest poverty from criminal poverty and drunkenness. The question was asked a few moments ago, he continued, if there were any difficulties in the way of doing this. I regret to say that there are a great many—more than I can tell you of in a whole evening. The principal one is the difficulty of discriminating between a man who has been hampered at home by the long tongue of a scolding wife or driven out by the cries of a sick child and takes to drink, and when arrested by the officer, out of pure desperation strikes him, for which offense he is brought before a magistrate on a charge of "disorderly conduct," and he who is habitually guilty of disorderly conduct in the strict legal sense of the term. In my opinion, the former is the less guilty of the two.

The law defines disorderly conduct as any act which, in the opinion of the police magistrate, shall be deemed to be a breach of the peace, leaving him a wide discrimination as to what constitutes a breach of the peace. The punishment in one case may be greater than another. When we come to the matter of punishment, the magistrate may commit the prisoner ten days and fine him in a sum not to exceed $10, to stand committed until the amount is paid, for a time not to exceed twelve months. Now there are many instances where men are guilty of gross disorderly conduct where they ought to be committed the whole time of twelve months, if not longer; but their friends come forward and offer to and do furnish any amount of good, solid, satisfactory, unobjectionable real estate bail. But there are other classes of wretches, as in the above-cited instances. Now these latter cases are not guilty of anything but that which is called the ordinary sense of justice in resisting what they deem an encroachment of their individual rights; but that man is thrust into the same cell as the regular "bummers," as we call them. There is no way by which we can effect a proper discrimination; but, as suggested by Mr. Sterne, the police magistrate can use considerable discretion.

I could relate many instances in which the leniency of the justice

has effected more good than the execution of the full rigor of the law. One I will mention which has come under my own observation.

I was one day sitting in one of the police courts of this city—I think in the Fifty-seventh Street Court—when "a raid" was made upon street-walkers. About forty women were brought in. The officers arresting them swore that they were caught in the act of "soliciting." One of the officers pointed to a particular girl and said: "She is the worst one of the lot." "Why," I asked, "is she the worst one of the lot?" He answered: "Because she tried to hang herself last night in her cell." I called her to me. Said I: "Come up, come up, and let us see you." The girl came to me; she could barely stand, and she was totally different from those surrounding her. There were lines of beauty in her countenance, and as she spoke, I was convinced, from the very tones of her voice and the language she used, that there was aristocratic blood in her veins. There was an air of refinement about her which was not present in the others. I asked her why she had tried to hang herself. She did not deny it, but answered: "Because she would be sent to the island for a month, and before the end of that time her child would starve." "Why were you out in the public streets?" "Trying to get bread to keep him from starving." "Was you ever arrested before?" "No." "How long have you been on the streets?" "About three weeks." I got the circumstances of her arrest, the circumstances of her coming into the city, then took the officer's statement. There was no doubt of her being guilty, but I preferred to fail in doing my duty, rather than to use over-zeal in the matter of punishment. I told her to go and spare her child. If the officer had exercised a little discretion, she would never have been brought in.

———o———

How a Woman Orders a Chest.—Hohokus writes: During our married life my wife has insisted that we could not keep house properly without a large chest, for bed-clothes and odd traps. Last week I took the dimensions from her, questioning as follows:

"How long?"

"Well, say ten feet," and she held her hands about a yard apart.

"How wide?"

"Well, pretty wide, say six feet," measuring it on her apron.

"How deep?"

"Oh, have it deep. I guess eight feet will be about right."

Bridget arrived while we were at tea. "Sure, sir," said she, "that Ryan, the storekeeper, is here wid a small barn on a stone-boat. He's tore down both the gate-posts drivin' in. I think it's a chist he calls it, and he says wher'l yez have it?"

I've succeeded in proving, by the original memorandum of measurements, that there was an error somewhere. The "chist" has a window in it, and contains the cow, calf and one bale of hay. Wife says she is going to Paterson this spring to find a man that knows how to build a chest, and not make it large enough for a cattle barn.

STREET PAVEMENTS.

[Contribution from the Department of Civil Engineering, Towne Scientific School, University of Penna.]

By Prof. Lewis M. Haupt.

Since the days of MacNeill, Telford, McAdam, Parnell and others, volumes have been written upon this subject, yet we have in many localities pavements which are a disgrace to a community making any pretensions to scientific knowledge.

This results either from a misunderstanding of all the conditions of the problem or an inability to fulfill them. The conditions, it is true, are intricate and variable, depending on location, grades, nature of merchandise, vehicles, power, subsoil, finances, etc., but in this monograph we propose to discuss briefly only the requirements of the *surface covering*, and to determine in the light of a long and varied experience what material will best fulfill all the conditions of a crowded thoroughfare.

The requirements of the surface are that it shall be: (1) firm and elastic; (2) noiseless, clean and dry; (3) smooth, yet rough; (4) permanent, yet easily removable; (5) light, yet heavy; (6) it should be durable, producing a minimum amount of wear and tear; (7) it must also be cheap and readily obtainable, and (8) non-combustible.

The impossibility of selecting any one of the available materials, wood, stone, brick, cement, iron or asphalt, which will fulfill all the above conditions, is apparent. A compromise must therefore be made, and one or more selected which will approximate most nearly to the requirements of the case.

It is interesting to observe the ingenuity displayed by advocates of a particular material, in making it conform to every want, and in *theory* all of the above materials have been found to answer equally well, but from a practical, rational and disinterested point of view it is impossible that such should be the case; *e. g.:*

Vegetable Substances, containing within themselves nitrogenous principles, elements of decay and putrefaction, should be rejected from sanitary considerations alone, but in addition to this, their combustibility, softness of fibre, permeability and cost, are serious obstacles, and the experience of numerous trials on both continents, under varied conditions, has proved them failures as to durability. We feel entirely justified, therefore, in omitting this material from the list of available substances until some more efficient means be successfully introduced of preserving the blocks, draining the foundation and preventing dry rot.

Iron has been used in various forms, but, being a manufactured article, it is more expensive than stone or wood, which are natural products. Hexagonal and other forms of blocks, covered with studs,

and standing on legs which were driven into the foundation, have been discarded because of the noise, expense and insufficient foothold. Wherever tried in the form of blocks, iron has been found very objectionable, and its use is now restricted to tram and railroads.

Bitumen is a natural mineral product, belonging to the class of hydrocarbons, and may be found either solid, as in *asphaltum*, or liquid, as in mineral tar. It is used chiefly as a matrix for harder materials.

The best asphaltum is imported from Seyssel, in France, and Neufchâtel, Switzerland, but a tolerably good article is also obtained from the island of Trinidad. This substance melts at a comparatively low temperature and is quite brittle when cold, so that it possesses properties which render it inappropriate for roads when subjected to great ranges of temperature and heavy traffic. When used, however, with sand and cement, it forms an excellent surface, so far as smoothness and durability are concerned.

The wooden pavement on Pennsylvania Avenue, Washington, has recently been replaced by another, part of which is composed of Neufchâtel bituminous limestone, one and three-quarter inches thick, laid on a foundation of eight inches of cement, and the remainder of "Grahamite" (pure asphalt from Ritchie County, Va.), two and a half inches thick, on a similar foundation.*

Brick, being merely clay indurated by burning, is too brittle for ordinary travel. We find ourselves, therefore, restricted to the use of stone or cement as fulfilling most nearly the requirements of a good road covering.

But *Stone* occurs in a variety of forms, as in "cobbles," boulders, "spalls," or blocks, and in sizes which vary as the ratios of their three dimensions. Of the three first mentioned forms, it is difficult to decide which is most injurious, yet these are the favorites with the community, because of their cheapness (?), and with the contractors, because of the proportionately large margin of profit and necessity of frequent repairs. By this general and brief analysis, we are induced to believe that stone of a regular geometrical form is that which is most suitable for the purpose; cement being an artificial monolith, whose dimensions may be extended at pleasure, is included in this class. It is not intended to review in detail the whole question of the adaptability of the various materials to the object in view, as this has already been done in an exhaustive and able report of forty-one pages, made by eight eminent engineers,† and published in the *Journal* of September, 1843, but to review and emphasize the conclusions therein deduced. It was recommended to use a pavement of "dressed stone," laid diagonally upon a foundation of concrete, in those squares where the sewers and various supply pipes were completed, and to lay stone tramways

* Letter of Gen'l Q. A. Gillmore, and his work on Roads and Street Pavements, page 182.

† The members of this Committee appointed by the Franklin Institute, June 26th, 1843, to report to City Councils on "The best modes of paving highways," were:

Elwood Morris,	George W. Smith, deceased,
Jno. C. Trautwine,	Jos. Saxton,
Henry R. Campbell,	M. T. W. Chandler, deceased,
Solomon W. Roberts,	Sam'l V. Merrick, deceased.

on the steep gradients from Front Street down to Delaware Avenue. These are substantially the conclusions we are forced to adopt, even after the lapse of these thirty-four years, yet in all this time they seem to have gained but little ground.

A tramway in connection with a "Belgian" block system would fulfill all the requirements in the best and most economical manner. Trams, eight inches deep and two feet wide, if well laid, would oppose the least possible resistance to the wheels of vehicles, and would be noiseless, whilst the blocks between would furnish the desired foothold, and the clicking of the horse's feet give sufficient warning of the approaching vehicle.* This arrangement supposes the conditions of the horse and carriage to remain constant, and until lately it has been assumed that these elements of the problem were fixed, but rubber tires have been introduced and give great satisfaction. Still the roughness of the pavement required to furnish the necessary foothold has been found to cut and destroy them so rapidly as to render their general introduction improbable. If now we can substitute for the present shoe a material that will prove as durable and as secure, at the same cost, it will open the way to great reforms in all the elements of locomotion, viz.: the pavement, the vehicle and the power.

Such an improvement has indeed been made and tested satisfactorily. It consists of a hollow shoe of the ordinary shape, open at the bottom, and having iron studs projecting vertically downwards through a three-quarter inch tarred rope, which they hold in place and which serves as a packing. The shoe is put on without heating and held in place by six nails. It has been used until worn down to a knife edge, and its life is quite as long as that of the ordinary iron shoe. The rope is not kicked out by use, but is, in fact, riveted firmer by the pounding down of the studs.

The general introduction of such an improvement would undoubtedly lead to the substitution of concrete for the rumbling rubber pavements now in use. The chief objection, lack of sufficient foothold, having been overcome, minor difficulties need have but little weight, as that portion of the surface overlying sewers, etc., might be divided into blocks which could be readily removed and replaced. The necessity of breaking the surface for pipes could easily be avoided by laying them hereafter under the sidewalks or in rear of the dwellings, in streets of the second class.

There *is* a street in Philadelphia (a short one, to be sure) upon which there is no railway, and whenever a wagon or cart passes at a trot it shakes all of the buildings, which are said to be substantial. What must be the waste of energy that will set in vibration the houses on both sides of a street whenever a vehicle passes? Yet the injury is not limited to the vehicle, the edifice nor the road covering, all of which are badly shaken up, but extends in a greater degree to the animal life affected by it: the horse, and the individuals in the house or conveyance. It is a constant strain upon the nervous system of women, invalids and children, whose sleep is disturbed and restless.

* Tram stones of the above dimensions can be furnished and laid, of Old Dominion granite, at a cost of $3.25 per lineal yard, whilst Belgian blocks, covering the same surface, are worth $2.25, making the trams cost one dollar more per yard, but every other consideration is in their favor, and ultimately they are cheaper.

The racket is especially noticeable by visitors from rural districts, who are unaccustomed to such a continual jarring. This enormous waste of energy can and should be avoided by recourse to proper engineering expedients, and no one will deny that a uniformly smooth, even and continuous surface, such as that furnished by a good cement pavement, with only joints enough to permit of expansion, would fulfill in the most perfect manner all the requirements for the horse, carriage, passenger and resident, could be kept perfectly clean, and when once laid, would require the minimum amount of expense for repairs and police.

Before closing, there is another point which is worthy the consideration of the enterprising and progressive citizen, and that is the large amount of space wasted by front steps. In many streets at least half the footwalks are interrupted by such projections, forming useless dead spaces between them, which serve to collect the snows of winter, to be piled up in the street, forming impassable obstructions for a considerable length of time. The steps themselves, exposed as they are, become dangerous from ice, and are not an architectural necessity nor ornament. Every consideration of humanity would suggest their being withdrawn, and, when necessary, occupying the place of the vestibule, leaving an open recess or niche in the place of the outer door. Thus the visitor or resident would be sheltered from sun, wind, rain or snow whilst waiting the answer to his summons; the steps would not be dangerous by being coated with sleet; the suggestion of hospitality would be extended by the apparently open door, which effect would be heightened by an outside lamp at night, and the full breadth of the sidewalk left available for a promenade, with rows of trees, if desired. The plan is not a new one, but is in use in many cities of this country and the continent.—*Journal of the Franklin Institute.*

———o———

Light in Stables.—Neither cattle nor horses should be stalled in a dark stable, as all animals require light in the day-time. A horse kept for months in a stable would be liable to become blind. In regard to light in swine pens, a writer says that two sows having litters on the 18th and 22d of January, respectively, were kept in two rather dark, but warm, temporary sties, and had to occupy them till about the middle of the month of April, when, for each sow with litter, one of the permanent sties was opened by selling the occupants. At that time the pigs which had been kept in the dark temporary sties proved to be less lively than, and much inferior in weight and size to those of any of the litters raised in the less warm but well-lighted permanent sties, notwithstanding that the difference in age was very small, and that food and care had been the same in every respect. One of the litters born on the 18th of January, which had accidentally the best-lighted sty, though situated in the northwest and consequently coldest corner of the frame building, exhibited the most rapid growth, and the litter born on the 18th of January, which had the darkest sty, had made the poorest.—*Lancaster Farmer.*

THE LITIGATION OF LIFE INSURANCE CLAIMS.

The payment of Insurance Policies matured by death is made, in a vast majority of cases, without dispute or delay. We publish from month to month the amounts thus paid by the companies associated in the Chamber of Life Insurance; and the aggregate is more than twenty millions of dollars per annum; more, in fact, than the entire revenues of the government of the United States within the memory of men now living. But, as in every other business of magnitude, so, in this, disagreements sometimes arise which can only be settled by the courts; and the cases which attract public attention are the ones which are disputed, rather than those in which payment is quietly made. Hence has arisen, in many minds, an impression that Life Insurance Companies are exceptionally litigious; and that they, as a class, are disposed to take advantage of technical and trifling objections to resist the payment of just claims. Many of the measures proposed in the New York and other Legislatures during their recent sessions have grown out of this false impression; and some of them, if adopted, would have gone far to facilitate fraudulent schemes for the plunder of these companies.

On the other hand, it is justly urged that mistakes are possible in so minute an account of one's physical history and family as the companies require from an applicant; and that after his death explanations are often impossible, which might have been made with ease during life. Thus a company which is disposed to shirk its obligations has advantages in a litigation which are unfair in substance, besides the fact that its wealth and the absence of a personal conscience in a corporation enable it to protract a suit beyond a reasonable limit of time and expense. The importance of finding a remedy for such hardships as this is strongly felt by our Legislatures; while they are in danger of making the remedy too sweeping, and of making a rule upon the basis of a rare exception, thus injuring the entire business and impairing the obligations of morality itself, in their zeal to do away with an individual wrong.

It ought to be distinctly understood that fraud is the great enemy of Life Insurance; and that a company, in contesting claims which are unjust, is only protecting its honest members. The institution which knowingly pays a dishonest claim ought to forfeit all confidence. The danger in this direction is far greater than in that of undue litigation; it being, in the present temper of the public mind, much cheaper and more profitable to pay without dispute than to appear in the character of a contestant, if the company means to continue in business.

For these difficulties we can see no effectual remedy, except the better instruction of the insuring public on the subject. Let it be

understood and felt by them that a fraud on a company is a fraud upon them, and that they are the real parties to the contest. It would be of the greatest advantage if a special tribunal were constituted to hear all such cases; having the peculiar knowledge of the business which is essential to understand them fully, and extending final authority in adjusting them. It is doubtless within the power of the Legislature to establish a court with this special jurisdiction; and its value to the holders of Life Insurance Policies would be vastly beyond its cost.

The Chamber of Life Insurance reports: The amount paid by the Chamber Companies during the month of April, 1877, upon Policy Claims, was as follows: Losses by death, $1,661,485.69; Matured Endowments, $305,090.20; Total, 1,966,575.89. Amount paid from April, 1874, to April, 1877: Death, $56,348,893.74; Endowment, $6,653,637.67; Total, $63,002,531.41.

---o---

Early Death of Teachers.—My attention has been recently called to the fact that so many of the teachers in the public schools of Philadelphia die young, and I am asked if there is anything in the profession of teaching calculated to induce this mortality. I think there is. The amount of arithmetic the teachers have first to cram into themselves, and then into a succession of pupils, is enough to sap their nervous energies. It must be an awful thing to spend days in driving such barren facts into vacant minds, and to waken up each morning knowing the same dreary routine lies before one. I do not think the community knows how really good and self-sacrificing the majority of our public school-teachers are. How, in winter, they gather clothing and shoes for many of the poorer pupils. How often they feed and help them, and visit them, in sickness, at their homes. Often but poorly paid themselves, they share the little that they have with those so much worse off. After all, how touchingly sad are the struggles of the poor for education! What sacrifices a destitute widow will make to send her little ones to school! One day a woman who worked for me came without her shoes. I asked her where they were. She told me that "Johnny had none to go to school in, and as she did not like to have him go barefooted, she gave him hers." Oh, boys, will you ever realize what women have done for you? How, at every step, you have been nourished on their tears, on their life? How, from the cradle to the grave, woman has been your best dependence, your most faithful friend? Think of it, and uncover your heads with reverence, even when the oldest, the poorest and ugliest of the sex pass by.—*Philadelphia Sunday Times.*

THE SANITARY QUESTIONS CONCERNING ABATTOIRS AND THE SLAUGHTERING BUSINESS IN NEW YORK.*

By E. H. JANES, M.D., Assistant Sanitary Superintendent of the Health Department of New York.

The duty assigned to me in the programme for the discussion of the abattoir question, is to give some account of the slaughtering business, and of the present condition of abattoirs and the smaller butcheries within the boundaries of my own field of sanitary labor, the city of New York; to point out the progress thus far made in the efforts at concentration of the business in that city, and the still further improvement which is already hailed as in the immediate future. I might premise, however, with the remark that the work of furnishing animal food to a population like that of the city of New York is, to say the least of it, an undertaking which ranks high among the business enterprises of the country; one which requires a large outlay of capital, involves a variety of interests, and calls into action intelligence and business talents of no mean capacity. To satisfy the wants of a community consisting of more than one million of people, to contribute toward supplying the suburban and more distant towns and cities with animal food, and to provide for the exporting interests, which are constantly increasing in magnitude and importance, are duties which devolve upon the New York butchers, while the health authorities are charged with the important trust of seeing that this immense business is conducted in such a manner as to be least prejudicial to the public health; that the vast amount of refuse and offal produced be so disposed of as not to become a perpetual public nuisance; and that the many offensive trades growing out of the slaughtering business, and either directly or indirectly connected with it, be placed and maintained under the proper sanitary direction and control. It is alike for the interests of trade and for the interests of public health and of public comfort, that it behooves the authorities to so regulate and control the slaughtering business, as to secure to those engaged in it the greatest economy, and at the same time to protect the public from the many nuisances emanating from it. We must also admit that when radical changes are to be effected in so large and useful an industry, the entire question should be carefully considered, and extreme measures adopted only after mature study and deliberation, and with as much consideration for the affected parties as is consistent with the public health and the public welfare. Such has been the policy of the New York Board of Health in dealing with this question, and by making haste slowly, yet by constant and persistent pressure, considerable advance has been made toward concentration, and still further results are on the eve of completion.

*Read before American Public Health Association, Boston, October 4th, 1876.

That we may have some idea of the extent to which the slaughtering business is carried on in New York, let us glance at the approximate figures as obtained from the butchers themselves, and which sum up as follows: The number of beeves annually killed 363,550; of small stock, 1,155,000. The number of hogs killed annually has been about 1,200,000, although it is said that during the present year the number will be something less, owing to a temporary dullness in the market. About half of this quantity of pork is for exportation. These figures, as I have already said, are only approximate, though obtained from the butchers by direct inquiry. Yet, for reasons which it is not necessary to speculate about here, butchers are not always ready to make known the full amount of their business. Besides the numbers above given, there is one establishment where 750 beeves, upon an average, are slaughtered weekly for the foreign market alone. How to control this immense trade, and how to deal with the large amount of offal and refuse accompanying it, is a problem which has severely taxed modern science and modern ingenuity, and which finally admits, so far as large cities are concerned, of but one solution, viz., concentration, or the abattoir system, established at some convenient point or points, convenient for the landing of live stock, furnished with the best modern appliances for slaughtering, and facilities for immediately utilizing all refuse in such a manner as to prevent its becoming a public nuisance.

To-day, however, New York can boast of but one abattoir which is complete in all of its arrangements, and that is located at the foot of West Thirty-fourth Street, by the Hudson River. The building was erected for a market, is a fine specimen of architectural skill, and is substantial in structure; but, not proving successful as a market, it has recently been converted into an abattoir, no expense having been spared to render it a model of convenience and of sanitary excellence. The appliances are such as to render the work easy; the ventilation is good. The floors are non-absorbing, easily cleansed, and the drainage is perfect. The tallow is rendered while perfectly fresh, and the blood and offal are utilized without delay, all of these operations being conducted in "Craven dryers," the gases from which are run directly into the sewer, which discharges eight feet below the surface of the water at low tide, and are thus condensed and rendered inoffensive. The place is under good management, is thoroughly cleansed each day as soon as the work of slaughtering is finished, and instead of its being a nuisance, it is externally ornamental, and the internal arrangements are such that the work is entirely hidden from the view of any one in the street. The cattle arrive by boat, and through an underground tunnel are driven immediately from the landing-place to their pens, without passing through any portion of a public street. This establishment was in active operation during the extremely hot weather of the past summer, and thus far has given rise to no well-founded complaint. They are at present slaughtering about 1,000 beeves per week at this abattoir, though its capacity is sufficient for six or seven times that number. The Butchers' Hide and Melting Association have a building on Forty-fourth Street, near the East River, with a capacity for slaughtering from 5,000 to 6,000 cattle per week. The building is 275 feet in length, and is divided into twenty-

seven "balks," for the accommodation of as many butchers. It was the first building erected in New York for an abattoir, and has always been kept in a good sanitary condition, though it has never received the encouragement from individual butchers which it deserves. The tallow is rendered in an adjoining building, the gases being passed through spray-condensers, and thence into the sewer, which discharges into the river about six feet below the surface of the water at low tide. There are no facilities here for the treating of offal and blood. The offal and blood from the slaughter-houses on the east side of the city are utilized at a large establishment in the immediate vicinity, while all refuse from the smaller houses on the west side is removed from the city. The Union Stock Yard Abattoir, at the foot of West Sixtieth Street, is well arranged for slaughtering, which is principally done for foreign trade. There are no facilities here for rendering or for treating the blood and offal. The average amount of slaughtering at present is about 800 cattle weekly, nearly all of which are for the foreign trade. The abattoir at "Harsimus Cove," Jersey City, is a well-arranged establishment, as regards convenience, neatness, dispatch, and the sanitary interest of all concerned. The floors are non-absorbing, and may be flushed at any moment. The several compartments are separated only by iron railing, which, aided by movable skylights and side windows, affords every facility for thorough ventilation. The fat and offal are removed from the premises without delay, and the hides are salted immediately upon being removed from the animals. The annual amount of slaughtering at this abattoir has been, in round numbers, about 200,000 cattle, 300,000 sheep, and 600,000 hogs. The sanitary care of this abattoir is undertaken by the proprietors, to whom the butchers are subordinate as to the hours of killing, etc. This regulation is necessary, in order that those whose work it is to clean the premises may not be interrupted or delayed. Besides the abattoirs mentioned, New York has fifty-two separate and independent slaughtering-houses, nearly equally divided between the east and the west sides of the city. Those on the east side occupy an area extending from Forty-third Street to Forty-seventh, including these two streets, and from First Avenue to the East River. Those on the west side are nearly all of them confined to an area extending from Tenth Avenue to the Hudson River, and between Fortieth and Forty-first Streets. There are three or four scattered above this near the river, and there is also one at the foot of East One Hundred and Sixth Street. But few of these buildings are well-constructed and have yards properly graded and paved, and a drainage such that no special complaint can be made of it. Nearly all of them are but poorly adapted to the purpose of slaughtering animals, by reason of imperfect construction, defective drainage, and a general absence of the necessary sanitary regulations, which cannot be successfully carried out so long as the business is conducted in detached places, each proprietor indulging in his own ideas of sanitary requirements. There are also, in the recently annexed district, eight small slaughter-houses for supplying the local wants, killing, in the weekly aggregate, about thirty beef cattle and eighty small stock. These latter are small, badly constructed, and generally deficient in sanitary provisions, but as the neighborhoods where they are located are

somewhat thinly settled as compared with the city, perhaps the greatest nuisance in connection with them is the contamination of the water streams into which their drainings and washings are discharged, there being no system of sewerage in the district by which this could be avoided. This is particularly the case with a small stream known as Mill Brook, which, from receiving the filthy drainage of a large neighborhood, is reduced to a condition little above that of an open sewer.

The hog-slaughtering establishments are all located near the Hudson River, between Thirty-ninth and Fortieth Streets. At each of these places lard is rendered in steam tanks, the gases being in some condensed and discharged into the river, in others destroyed by combustion. At one of them blood and offal are treated with chemicals, and reduced to a valuable fertilizer. All of these places are kept in good sanitary condition, there being no complaints, except occasionally from some imperfection or temporary derangement of the rendering apparatus.

It has long been the practice of the Board of Health to have frequent and systematic inspections of all the slaughter-houses in the city, with a view of enforcing the sanitary ordinances. During the summer months these inspections have been daily, when careful note has been taken of everything pertaining to their sanitary condition. By these daily inspections certain regulations are enforced which would have been neglected had the butchers not felt that they were under this daily surveillance. The inspectors insist upon the prompt removal of offal and manure, the daily cleaning of the premises, the frequent whitewashing of walls and fences, and that the buildings be kept in good repair. Notwithstanding these frequent and careful inspections, there still exist evils which are inseparable from this system of conducting the business in a number of small and detached buildings. Each establishment regulating its own hours of work and its own time for cleaning, and each proprietor establishing his own standard of what he considers cleanliness, the neighborhood is rarely exempt from the obnoxious effluvia so closely associated with this business. It is not unusal to find, immediately after a slaughter-house and a yard are supposed to have been cleaned, particles of offal adhering to the walls of the buildings or along the fences or caught in the interspaces of the rough pavements; portions of manure adhering to the fences or in the corners of the yard; pools of bloody water in the depression of the uneven pavement, or streams of surface drainage made filthy with manure and blood finding their way over the adjoining sidewalk to the street gutter. These refuse portions of animal matter soon take on the process of putrefaction, and the atmosphere becomes in a short time loaded with the offensive odors peculiar to neglected slaughter-houses.

Another great evil connected with the distributed system, is that it necessitates the driving of cattle through the public streets, a practice not only unsightly and annoying, but one that is often fraught with danger to the lives of citizens. It is true that where the business is confined to narrow limits at the water side, as in the city of New York, where the cattle may be landed from boats, the driving can be confined to streets in the immediate vicinity of the slaughter-

houses, the recent amendments to the Sanitary Code requiring that the animals be landed from boats on either side of the city as near as possible to the place of slaughtering, and not driven across the city. Yet even with this provision there are no means of reaching their several places of destination except through the streets leading to the several slaughter-houses, and this generally in the busy part of the day, when the streets are lined with horses and butchers' wagons, and every condition obtains calculated to frighten the animals and render them unmanageable, to the great danger of injury to passers-by or to children residing and playing in the vicinity. This practice of driving cattle along the crowded thoroughfares of a great city, a practice always annoying to citizens and one that has cost many lives, might be wholly avoided by concentration of the slaughtering business within properly-constructed abattoirs. The recent action of the Board of Health in adopting an ordinance restricting the driving of cattle in the streets, is regarded by the entire public, some of the butchers, perhaps, excepted, as a long stride in the right direction, and it only needs the completion of another step—that of concentration—to render the driving of cattle in the streets wholly unnecessary, and thus to relieve the public of a dangerous nuisance.

In order to reduce the business of slaughtering in large cities to a condition more compatible with public health, safety, convenience and economy, one, two, three, or even more—according to the amount of business—large abattoirs should be provided, and furnished with all the modern appliances not only for expediting the work of slaughtering and handling the stock, but for the immediate and proper disposal of all parts of the animal not suitable for food. This latter branch is a highly important one, as the methods of dealing with offal under the existing distributed system of small butcheries, is one of the most repulsive and objectionable features of the slaughtering business. It is the offal wagons and the fat wagons going to and from different parts of the city, and the various rendering establishments distributed over extensive areas, that contribute so largely to the impurities of a city's atmosphere; whereas concentration enables us to deal with these matters at once, allowing no time for putrefaction to commence. It provides for the most approved machinery, which smaller and detached establishments cannot always afford, thus greatly modifying if not wholly abating the nuisance which attends every attempt to utilize animal refuse upon any other system, and does away with the many offensive trades which grow out of this, and are usually found scattered about in various localities. The abattoir system relieves the individual butcher from any responsibility concerning the general condition of the premises, and, as the special conveniences are common to all, his expenses are much less than when occupying a separate establishment, on the principle that in all instances combination lightens the individual burden. These abattoirs should be located as near as possible to the water, for the easy construction of sewers and the perfection of drainage; or what is better, if they could be made to project over the water where there is a good current, so that all waste fluids and washings could be at once discharged into the water without the necessity of an intervening sewer, it would complete the facilities for perfect drainage and

cleanliness. They should also be located so that animals may be landed, either from boat or rail car, immediately on the premises, without any possibility of finding their way into the public streets, thus securing the public from great annoyance, to say nothing of occasional excitement and danger incurred in consequence of a frightened bullock escaping from the drove. This is one of the excellent features of the Thirty-fourth Street abattoir, where the animals are transferred immediately from the boat to the cattle pens, without any possible access to the street, where they are never seen.

In the city of New York this transition from the distributed to the concentrated system is being brought about gradually by the steady maintenance of sanitary requirements and the persistent enforcement of sanitary ordinances. By this continued pressure the butchers were, about eight years ago, removed from various parts of the city to their present limits. Previous to that time no portion of the city was exempt from the nuisance of cattle-driving, and the atmosphere was daily receiving from fifty different centres the disgusting emanations from as many rudely-constructed, and still more rudely-managed slaughter-houses. Street gutters were often flowing with blood from the slaughtered animals, owing to defective or total absence of sewerage; the buildings became saturated with animal matter, and were, therefore, constantly tainted with the disgusting odor of animal putrefaction; the ground underneath the buildings became completely sodden with slaughter-house filth, and it was not unusual to see the nuisance extending to adjoining premises, and even to neighboring streets. Since the business has been confined to the present limits, the system of frequent inspections is more easily maintained, and the frequent repairs which the butchers are called upon to make, in order to be able to continue their places in a condition suitable for the business, the amount of labor necessary to effect the daily cleansing of separate establishments, have convinced many of the butchers that concentration will be less expensive to them than any further attempt to run their separate slaughter-houses, subject to frequent orders from the Board of Health. At the same time the man who has invested largely in the slaughtering business, sees in every pound of offal that is utilized an inducement to perfect his facilities, that he may add to his own income in proportion as he contributes to the abatement of a public nuisance. He also sees that by concentration alone can the refuse portions of the animal be utilized with profit; that the fat can be rendered while perfectly fresh, and in an inoffensive manner; that the blood and offal, before having had time to putrefy, are changed into comparatively inoffensive and valuable fertilizers. Thus what was formerly a noxious waste becomes a source of profit to the individual, and of health and wealth to the nation. During the present month, or early in November, if the work now in active operation is not interrupted, the separate slaughter-houses on the west side of the city will be closed, and their business removed to an extensive abattoir now being constructed at the foot of West Fortieth Street. This will relieve Tenth Avenue, Fortieth and Forty-first Streets from the unsightly structures which have long disgraced the neighborhood, and settle the question of locality for many years to come. Similar

arrangements are being made on the east side of the city, which will probably be completed during the present autumn.

In conclusion I shall simply repeat what I have elsewhere said, that the sanitary interests of the city of New York require that the business of slaughtering animals for human food be done in large abattoirs, where there is every facility for properly disposing of all parts of the animal; where the animals, before being slaughtered, could be viewed by a competent inspector, and where all meats placed in the market should first have the approval of an efficient and conscientious sanitary officer.

I therefore offer, for consideration of the Association, the following resolution:

Resolved, That the concentration of slaughter-houses in large abattoirs, located at the water side, below cities, when possible remote from business centres and human dwellings, provided with facilities for utilizing all portions of the animal without delay, is regarded as essential to public health, and considered conducive to private economy.

———o———

A Vicious Plaster.—A gentleman who had an acute pain in his side, yesterday, put a mustard plaster of powerful drawing capacity over the affected region, tied it on with a bandage, and started for his place of business. When upon Main Cross he was horrified to find that the plaster had become loose, dropped many degrees below its original position, and had commenced chawing the solid meat of his ham. He thrust his hand into his pocket to remedy the evil, but could not choke the plaster off. It had established a residence there, and he could feel the skin rising into a blubber under its powerful suction. He rushed into a business house to retire up-stairs or somewhere where he could fix things differently, but just as he entered he met a number of lady friends who all seemed delighted to see him. They had some kind of enterprise on hand and wanted him to contribute. He said he'd see them again, and they said it was an old dodge, and that he couldn't play it that way. Then they went on to explain, and he writhed in agony. The plaster was getting at its work—pumping the water from his system at every pore; and when he finally darted out of the store and flew down an alley with his hair standing on end, those ladies raised their hands and said, "Did you ever! Who would have thought that Mr. —— would have been so penurious."—*Madison Courier.*

Editor's Table.

THE AMERICAN MEDICAL ASSOCIATION

Convened at the appointed place and time, Chicago, June 5th, ultimo, in its twenty-eighth annual session, and continued four days. After the usual preliminaries incident to the change of places of outgoing and incoming Presidents, Drs. J. Marion Sims and Henry J. Bowditch, prayer by Rev. Dr. Harris, and address of welcome by Dr. N. S. Davis, Chairman of the Committee of Arrangements, the session was begun, as usual, with

The President's Address, which was listened to with the marked attention it deserved: for it was no mere felicitation to a joyful assemblage, but an earnest, dignified, suggestive discourse, which appealed to the best interests of the profession. After briefly sketching the heterogeneous condition of the medical profession in this country previous to the birth of the Association, thirty years ago, and the first effect of the organization in binding the medical men of the country to a common and lasting fraternity, he proceeded to point out the short-comings of the Association in the fulfillment of its purpose, the real marks of progress which had distinguished it, and to urge still more signal advances. In the first place, there was chance for improvement in the Sections. There was not enough criticism of the papers read, nor was it exactly the right kind. He thought the Association should adopt the plan in use at the Smithsonian Institute—not to publish anything until after it had been submitted to and approved by experts, whose decisions are final. The Association should further declare, as its rule for the guidance of such experts, that no paper should be deemed worthy of publication which did not give something new to medical science, or which did not present such an analysis, or such a new or lucid arrangement of facts wholly or in part known, as to greatly aid the profession.

Dr. Bowditch spoke in terms of warm praise of the public entertainment at the Louisville meeting, which was conducted on temperance principles. The simple fact of a temperance entertainment in Kentucky was in itself an evidence of the triumph of true temperance principles. This Association, to its praise be it said, had also extended an invitation to women to meet with it. He thought the Association should take the highest ground against the use of intoxicating drinks among its members. Such action would have the most important effect on the noble cause of temperance throughout the land. He was in favor of reduced representation: would have Societies send one delegate for every twenty or thirty members, instead of one for every ten; and he believed that with this change the honor of

being a delegate would be more sought after, and that it would devolve upon the very best men in the profession, which was not always the case at present.

He advocated a union with the Canada Medical Association. The American Association had been a great means for promoting good will between the States, and he thought the proposed union with Canada would do much toward reuniting two of the greatest nations on the globe. Civilization could get nothing but good from such a co-operation. All the means they could bring to unite mankind he hailed with delight. And last, but not least, what a pleasure it would be to unite with professional brethren in the old and historic cities of Montreal and Quebec!

To the subject of the revision of the American Pharmacopœia, and the proposed rejection of the one in use and the substitution therefor of an entirely new, more modern, and more complete work on that subject, Dr. Bowditch referred at considerable length. He was not prepared to recommend any of the plans yet put forward, because, as he said, more light was needed on this very important subject.

He spoke of the importance of State Boards of Health, and impressed upon his hearers the necessity of conversing with, or writing to, their representatives in Congress in reference to the museum and library of the Surgeon-General of the Army. This should be well-sustained and augmented, and it could not be done by aid from the national exchequer.

In closing, Dr. Bowditch said the future of the Association depended mainly on the way in which the physicians of this country, and especially the young physicians, did their duty toward it. If the best men in the profession would not come to its meetings and work for the common good of all—if they stood aloof and complained of the inferiority of its work, or actually scoffed or sneered at it—it would accomplish less than it could wish. But it should certainly love to invite to its meetings every prominent physician in the country; and if those who did attend the meetings would determine that nothing but what was excellent should be published in its transactions, then they would be doing a really noble work, and the Association would eventually claim the highest respect of the whole profession. It was growing stronger every year. It had enjoyed a perpetual youth, a stalwart manhood, and he sincerely trusted it would live to a genial old age.

The Revision of the United States Pharmacopœia, by Dr. E. R. Squibb, was the next subject of general interest. Dr. Squibb began by explaining the embarrassment in which he was placed by the arrangement of business. One hour only was assigned him for a report which he had prepared, on the authority of the Association, without limitation, and which it was impossible for him to read in the time allotted. He proceeded, however, to show the advantages of an authoritative Pharmacopœia under the direction and control of a permanent committee on revision, selected with a view to their special fitness from the members of the Association, and the dangers of an opposite course. . . In summing up, he laid special stress on the following considerations: Whether a change in the Pharmacopœia is or is not desirable; and if a change is desirable, who has the power

to decide as to how the revision should be made? The Association has three courses before it. The whole subject might be laid on the table, and this would be most acceptable to the speaker, who would thus be freed from all further responsibility in regard to a much-disputed question, the discussion of which had already developed much personal feeling. In the second place, they might prepare a plan and offer it to the profession, allowing it to stand upon its merits. And in the third place, they might appoint through the Nominating Committee a committee of three to prepare a report for presentation at the meeting next year. He would be glad to listen to discussion, and suggested that it be confined to a consideration of these three points.

In the presentation of the subject, Dr. Squibb criticised those who differed from him with a good deal of vehemence, and quoted freely from a pamphlet of his own, and another advocating opposite views by Dr. H. C. Wood, of Philadelphia.

Dr. Wood replied, and contended that the present system of a decennial convention to revise the Pharmacopœia was a good one, and that no necessity existed for any such change as that proposed. Dr. Squibb had stated that if the Association prepared a Pharmacopœia it would have to do it alone. Another would also be prepared in this case, and that of the Association would have to contend against it. The consequence would be that two Pharmacopœias would exist side by side, and to which the law of the survival of the fittest would not apply. The American Medical Association could not agree even on so simple a matter as the nomenclature of disease, and it was not at all likely that they would be able to agree on such a measure as that proposed by Dr. Squibb.

Dr. N. S. Davis believed that if the Association entered as a factor with any other body in the preparation of a Pharmacopœia, it would have to assume whatever of praise or odium attached to that work. While yielding to none in his respect for the Association, he held that they should keep free from incurring pecuniary obligations, from purchasing copyright interests, and contracting entangling alliances. He believed in allowing the Convention to do its work, and to send such men to that Convention as it could depend on. He favored the indefinite postponement of the whole matter, and made a motion accordingly, which was adopted.

The only other subjects of interest in the general sessions were the addresses of the Chairmen of the Sections.

The Danger of Accumulated Sewerage.—Dr. P. G. Robinson, Chairman of Section on Practical Medicine, in recounting the progress in his department during the past year, said: It had been fully shown that accumulations of sewerage and the like became centres of contagion. A terrible outbreak of typhoid fever in Lancashire, England, which was reported on by one of the Government Inspectors, affected fifty-six families out of fifty-seven using milk supplied from one dairy. It was found that the cows drank from a brook polluted by the discharge into it of fecal matter. The attention of the Association was called to an article in the July number of the *American Medical Journal*, where the cure of a case of rabies canina, by the use of strychnine, was reported by Dr. Watson, of Jersey City. Several persons were bitten by the same dog, and a servant-girl died

of unmistakable rabies. In the other case the disease was not developed until five days after the girl's death, and the fact of her decease was well known to the other patient. In his case, however, there was no aversion to water shown, and for that and some other reasons, a number of physicians held that it was not a true case of hydrophobia. The great question to be settled was that of diagnosis.

Dr. J. P. WHITE, Chairman of Section on Obstetrics, said that the most notable event of the year, in his department, was the formation of a society of physicians interested in the diseases of women and in obstetrics. This society was formed in New York, is known as the **American Gynecological Society,** and its transactions and publications were of great interest to the medical profession, and in a high degree promotive of its advancement.

DR. EZRA M. HUNT, of New Jersey, Chairman of the Section on **State Medicine and Public Hygiene,** gave a general review of the progress of Preventive Medicine, and illustrated its benefits by inoculation and vaccination. He believed that it was possible, by energetic preventive measures, to practically remove zymotic diseases, and contended for a more efficient sanitary police. If municipalities would furnish means, Boards of Health could go for epidemical disease in as systematic a way as a fire-engine went to a fire, and could as effectually stamp it out. Public hygiene received much greater attention in England than in this country, and engaged the attention of many of her most prominent scientific men. There is no better way to train the medical student than to familiarize him with the methods of the best sanitary records. In conclusion, the lecturer urged on all medical colleges to pay greater attention to the subject of public hygiene, and to make its study a part of the college curriculum. He believed that in the time to come, by paying the strictest attention to sanitary principles, disease might be almost entirely prevented, and instead of needing two Pharmacopœias, they would be able to dispense with any. There was no fear, however, that Othello's occupation would be gone, but the profession would become a preventive force.

The several Sections all promptly organized on the afternoon of the first day, and daily thereafter until the close of the session, with their respective Chairmen elected at the last session; excepting the one on Surgery, which, in the absence of Dr. D. Hayes Agnew, elected Dr. Frank H. Hamilton, of New York, Chairman *pro tem.* And for the same reason (the absence of Dr. Agnew) there was no address from this Section in open convention.

The address from the Chairman of the Section on Medical Jurisprudence and Psychology was also omitted, according to custom, apparently, there having been but one annual address from that Section since its organization, four years ago. This Section was well attended, however, and there were several interesting papers and discussions; but it strikes us, they were all on subjects clearly pertaining to the subject of State Medicine and Public Hygiene, and that these two Sections should be united.

But it is not our purpose to give a report on the several Sections; indeed, it is impracticable for us to do so, inasmuch as the representative of THE SANITARIAN was allied with the one on State Medicine

and Public Hygiene, exclusively, throughout the session. Our abstract will therefore be limited to it.

This Section was called to order by Dr. E. M. Hunt, of New Jersey, Chairman, and, in the absence of Dr. D. R. Wallace, of Texas, Dr. Williams, of Indiana, was elected Secretary *pro tem.* The first paper was by Dr. J. L. Cabell, of Virginia, on

The Etiology of Enteric Fever.—The paper comprehended an extensive correspondence on the development of typhoid fever, which, for the most part, attributed the origin of typhoid fever to filth, as is generally the case. But Dr. Cabell took up a number of cases where there was no end of filth, but typhoid fever was unknown. He believed that the laws affecting germ life were far from being fully understood, and that the facts did not warrant the *de novo* doctrine of Bastian's theory of heterogenesis. Speaking of the tenacity of germ life, he said Indian corn, a semi-tropical seed, had been exposed for years in the Arctic regions to a temperature seldom less than fifty degrees below zero, and yet it maintained its vitality. The replies he received from correspondents indicated that typhoid fever was developed by excremental filth, by the use of milk from cans washed in tainted water, and by vegetable decomposition. Many correspondents cited much evidence to support the theory that decaying wood was far more likely to develop typhoid than was other vegetable decomposition. A soil saturated with organic impurities was fruitful in producing typhoid. But Dr. Cabell said that typhoid was to be found where none of these causes were at work, and he regretted that the belief in excremental poisoning as the great source of the fever had caused physicians to overlook other hardly less important, but almost unknown causes. A large number of the replies, cited many facts to show that there was an antagonism between typhoid and malarial fevers, and that typhoid is unknown where malarial fever is prevalent.

Dr. J. R. Black, of Ohio, read a paper on

The Laws of Heredity, with Special References to the Transmission of Morbid Tendencies, Abnormal Forms, and the Effects of Intermarriages.—He said that the improvement of the domestic animals had long been the source of earnest thought and care, and the objects sought to be accomplished, whether beauty, strength or endurance, they had been eminently successful in obtaining. As regarded the human race, nothing of the kind had been attempted, everything being left to chance except as regards efforts to train the head and heart. The leading object of this culture was social success, and to gain this the welfare of blood and brain was often sacrificed. There was no wonder that the boasted head of creation should be at its foot so far as vigor, health and longevity were concerned. It was certain that the stamina of man as a race was, if not retrograding, at least not advancing. The especial reason of this was the over-exercise of some and the enforced inaction of other organs. Brain-toil was commenced far too early, ere yet the brain was capable of sustaining it, and only the strongest young men and women were able to go through a long collegiate curriculum unscathed by disease. This fact, demonstrated before the fertile period had been reached,

had a special bearing upon hereditary modification. During the more primitive forms of civilization, weak and imperfectly-developed children were more likely to perish by the hardships to which they were exposed. Physical strength was more sought after in those days, out-door exercise was general, and the diet simple and wholesome. To-day every possible means was adopted to keep such children alive, and when they reached manhood or womanhood they were advised and encouraged to marry healthy persons, thus aiding to extend and intensify the prevailing blood-deterioration. The consequence was, the multiplication, to an alarming extent, of hospitals and infirmaries.

Through the reports received from some of the most advanced medical thinkers of the day, many typical instances of recovery or reversion from an inherited tendency to disease, when the conditions favorable thereto had been faithfully and skillfully carried out, had been collated. Reversion from acute diseases was an every-day affair. A large number of instances of the reproduction of congenital peculiarities and abnormal forms were cited by the lecturer, who then proceeded to give some particulars as to consanguine marriages, the statistics being derived in the same manner, and relating entirely to physicians or their connections.

From these figures the deduction was made that the chances of the issue of consanguineous marriages having well-formed bodies and sound minds were so small, that the strongest legal enactments against them were justified.

In conclusion, he declared that the more the primitive phases of civilization were considered, the more apparent did the fact become that the somewhat violent hardships and privations to which life was then exposed fell with special force on the weak and helpless, and little, if at all, on the vigorous, thus tending to the elimination of the one and the perpetuation of the other. It was apparent, further, that few persons possessed the strength of mind necessary to abstain from the perpetuation of the species, simply because they inherited a congenital disorder. Yet even this fact had an outcome not to be deplored. High intelligence, strong wills and consistent behavior would survive, while feeble-minded ignorance and volitions unstable as water, would carry the blood on to imperfection, disease and extinction.

Dr. A. N. Bell followed with a paper on

Tuberculosis in Milch Cows and the Contagiousness of Tuberculosis by the Digestive Organs, a full abstract of which paper will be given in our next number.

Dr. Comegys, of Ohio, read a brief paper on

State Medicine, which particularly dwelt upon the necessity of rigid legal restrictions as regarded admission to practice. The State should exercise over all physicians a supervision so careful that no unqualified person could, by any possibility, foist himself upon the community. In pursuing his subject, he remarked that gentlemen following the profession of medicine were, like clergymen, virtually debarred from the field of politics, which he did not consider an unmixed evil by any means.

Dr. Elisha Harris read a paper on

The Results of State Legislation on Public Health.—He

said that until recently the application of sanitary laws had been left to the local authorities. In nearly every State the legislation on public health matters had been obtained too easily, and at the suggestion of persons who could not properly give the precise form which both the construction of the statute and definition of methods or powers of their administration required. The excellent results of expert aid and counsel in the preparation of sanitary laws were amply illustrated in the States of Massachusetts, Rhode Island, Michigan, Minnesota and Wisconsin, and in the cities of New York, Boston, Providence, New Haven and Brooklyn. In every State there had existed general statutes for protecting human life from the contagion of small-pox or other pestilential disease; but even in these cases the administration of these laws had been perfect only when power to act had been conferred on medical officers acting as a Board of Health. For example, in New York a general statute empowered the Town Supervisor or Justices of the Peace to act as a local Board of Health. They had greater power than they knew how to exercise; but as the law provided no power and designated no person to set this authority in motion, action was not taken until the destroyer had already gained possession of the citadel. Another statute provided that the common school officers require every pupil to be vaccinated or to exhibit proofs of vaccination, and they were also authorized to appoint and pay vaccinating physicians. That law was entirely a dead letter; it had only been tried in two small cities, and proved a failure even there. The trouble was that this law, though good in itself, was not set in motion by competent authority. The same was true in regard to the laws for abating nuisances, draining, sewering, and regulating the sanitary wants of lodging-houses. The time must come, and that soon, when this most important subject would force itself upon the attention of the people.

Dr. Sutton, of Indiana, was called upon to give his experience in dealing with **trichinæ.** He advocated the passage of an act forbidding swine to run at large. In his town (Aurora) there was a very large distillery, where a great many swine and cattle were fed. Beneath their pens was an accumulation of filth which had been undisturbed for twenty years, and which was constantly disseminating disease. The City Council being selected by men interested in the maintenance of this disease-breeding establishment, it was impossible to procure the requisite legislation for its removal.

Dr. Harris had seen thirteen persons in one house suffering from trichinæ after eating uncooked ham, as many Scandinavians and others were in the habit of doing. He wanted immediate legislation, and hoped that some recommendation on this point would be made by the Section.

Dr. Ohr, of Maryland, suggested that if the Aurora distillery constituted a nuisance at common law, there was a remedy in the shape of a presentment by the Grand Jury of the county. This course had been adopted in his own town in relation to a tannery, and had been very successful.

The Section then adjourned.

The Sections all having adjourned on the afternoon of the third day, the morning Session of the Convention of the fourth and last,

June 8th, was devoted to hearing reports, miscellaneous business, announcements, etc., and final adjournment at twelve o'clock.

The following were elected:

Officers for the Ensuing Year.

President—Dr. T. G. Richardson, Louisville, Ky.

Vice-Presidents—Drs. J. P. White, New York; Moses Gunn, Illinois; G. W. Russell, Connecticut; A. Dunlap, Ohio.

Chairman on the Section of Medicine, Materia Medica and Physiology—Dr. A. L. Loomis, New York. Secretary of the same, Dr. J. H. Ethridge, Illinois.

Chairman of Section of Obstetrics and Diseases of Women and Children—Dr. E. W. Jencks, of Michigan. Secretary of the same, Dr. H. A. Marcy, of Massachusetts.

Chairman of Section of Surgery and Anatomy—Dr. H. H. Smith, Pennsylvania. Secretary of the same, Dr. E. B. Earley, Arkansas.

Chairman of Section on Medical Jurisprudence, Chemistry and Psychology—Dr. W. Kempster, Wisconsin. Secretary of the same, Dr. E. A. Hildreth, West Virginia.

Chairman of Section on Public Hygiene and State Medicine—Dr. J. L. Cabell, Virginia. Secretary of the same, Dr. E. J. Marsh, New Jersey.

The next annual meeting of the Association will be held at Buffalo, N. Y., on the first Tuesday in June, 1878.

The Convention will long be remembered as one of unusual pleasantness, the Committee of Arrangements having anticipated every want, and more effectually provided for every necessity than any preceding one hitherto. An insufficiency of room for some of the Sections was, to our knowledge, the only just cause of complaint.

The good people of Chicago generally united with the physicians, in extending such a welcome and social acquaintance as will not fail of lasting impressions.

THE SIX HUNDRED AND FIFTY DOCTORS, assembled at Chicago in this year of our Lord, June 5–8th, 1877, in general convention, now again returned to their homes and daily circuits, carry with them, throughout the whole expanse of our country, the most delightful memories of this great central city; whose citizens—like her own illimitable outlines—have no bounds to their hospitality, and of a kind which carries with it ineffaceable impressions of both place and people—refined, numerous and delightful.

The Association of American Medical Editors met, according to custom, at the place and evening before the time of meeting of the Medical Association. Its session was held in the Club Room of the Palmer House, at eight o'clock, P. M., June 4th, Dr. H. C. Wood, of Philadelphia, President, in the chair. The first business in order was the President's address.

The President said that, whatever its origin, the Association had a twofold meaning in its persistent life. It lives for war, defensive and offensive, and has the world for its field of battle. All warlike associations have two series of questions ever in order for discussion

—how to strengthen the individual members of the Association, and how to accomplish the ends of the general federation. There is great need of unity in the medical press for both these purposes. The voice of a united press is the roar that marks the near approach of the tempest—it is the herald of revolution; nay, more, it is the very force of the earthquake. The individual must be the basis of every combination. "Hurrah for ourselves!" is too often the key-note of many scientific as well as popular assemblages.

There are many more medical journals in America than in Great Britain, but when the individual journals are compared, the American bosom swells less majestically with patriotic pride. There is nothing in America which compares with the *British Medical Journal*, *Lancet*, or *Medical Times and Gazette*. This is not due to lack of brain-power on the part of the American profession, or of enterprise on the part of American publishers. The reason of the comparatively pinched appearance of American medical journals is poverty; a lack of subscribers, and of means to procure a sufficient staff of qualified contributors. Having no great centre, America has no great medical journals, but a multitude of small-fry swarm in every shallow. With some slight exceptions, all medical articles are divisible into two sets —those which journals want because they are worth publishing, and those which they do not want because they are not worthy of publication. The trouble is in the publication of "transactions." These have only two legitimate objects—the publication of papers so scientific as to be unsuited for the journals, and brief records of meetings. If confined to these they would soon waste away. The war-cry should be, "Down with transactions!" The one great need of our times is connected intimately with the subject of medical education. The extent and virulence of this curse of the profession has been so often portrayed, that it seems only worth while to speak of the remedy. The two plans of effecting a reform which have found most favor, are the endowment of medical colleges and the appointment of Governmental Examining Boards. Medical schools ought to be endowed, and doubtless would have so been if they had originally been placed on the same footing as other higher schools.

Let the American Medical Association draft, through a committee, a well-considered bill, and urgently recommend its passage by the State Societies, and this will have the effect of shaping future legislation.

Dr. N. S. Davis gave an account of the formation of the Association. Its chief object was to promote a better feeling among editors, and he believed that its perpetuation would reduce the use of scissors and paste in medical editing. While not holding such strong views as the President, he still believed that it would be well if editors would exercise their individuality and pay more attention to the advocacy of reforms.

Dr. Bell, editor of The Sanitarian, attributed the influence of Homœopathic and Eclectic medical journals with legislative bodies to their *editing*. The editors of those journals were united in a common resistance to what they considered a slight of their claims on the public patronage; hence they devoted more space to editorial matter, and had much more to say to the public, and to

legislative bodies especially, than the journals which we represent; and they were, therefore, proportionally more powerful with the public. In this regard, at least, we had much room for improvement.

Dr. Davis made a few suggestions as to the advantage of medical societies selecting a recognized journal as their organ for the publication of their "transactions."

Dr. Murphy, of Cincinnati, took exception to the President's address, especially in regard to his radical "tearing down" propensities. He neither believed in it as the best means of promoting professional advancement or medical literature. While he agreed with his friend, the editor of The Sanitarian, that more vigorous editing might be beneficial, he did not believe that such vigor consisted in continually berating one another, in "tearing down" all that we have hitherto built up; but that we should, on the contrary, make our strength felt by harmonious effort to sustain what we have and improve upon it; and thus win recognition and power, by showing that we are not divided among ourselves.

Dr. John P. Gray, of Utica, N. Y., editor of the *American Journal of Insanity*, was elected President for the ensuing year, and Dr. J. H. Davis, of Chicago, continued as Permanent Secretary.

The Rocky Mountain Association is a vigorous *shoot* of the American Medical Association, composed of those members who crossed the Rockies in 1871 to attend the annual meeting in San Francisco. Like as the Editors' Association, the place and time of meeting is made to conform to the American Medical Association; and the chief business, social communion and an annual address by the President. Dr. J. M. Toner, President, called the meeting to order and proceeded to give a very entertaining account of the journey which he and his confrères took in 1871, and what they collected and what they passed over by the way—the relics of the prehistoric and primeval Indian and Aztec tribes, traces of whose operations were found by the travelers. The operations of the mound-builders, the peculiarities of the relics found, as also of the skeletons, which differ so greatly from those of the Indian tribes of the present day, were dwelt upon at considerable length. The most interesting part of the address was the account of the medical practice among the aborigines. This was said to have consisted of bleeding, sweat-baths, the use of cold water in cases of rheumatism and other simple remedies.

On motion of Dr. N. S. Davis, a copy of the address was requested for publication, and referred to the officers of the Association. The same process was ordered with regard to the biographies of living and deceased members of the Association, which had been prepared by Dr. Toner.

The election of officers for the ensuing year was then taken up, and Dr. N. S. Davis, of Chicago, was elected President, and Dr. John Morris, of Baltimore, continued as Secretary. The Association then adjourned.

The Public Health.

Mortality per 1,000 inhabitants, annually, from all causes and certain special causes.

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,075,410—4 wks. end'g May 26.	747	1852	20.52	99		56	79	23	33	21	20		20	76	322	245
Philadelphia, 850,000—4 wks. end'g May 26.	485	1264	19.33	43	14	41	28	16	18	10	32	2	4	19	202	143
Brooklyn, 527,830—4 wks. end'g May 26...	329	771	18.98	26		57	81	2	15	6	4		13	14	121	89
St. Louis, 500,000—4 wks. end'g May 26...	126	395	10.27	16		12	5		3	5	7	3	4	13	60	68
Chicago, 420,000—4 wks. end'g May 26....	303	578	17.89	19	2	15	73	7	18	7	4		6	8	76	59
Baltimore, 350,000—4 wks. end'g May 26...	253	539	20.02	17		21	37	12		31	6		1	1	76	75
Boston, 363,000—4 wks. end'g May 26.....	179	493	17.65	23	2	26	10		3	2	5	1	5	7	94	55
Cincinnati, 265,000—4 weeks end'g May 26	103	298	18.01	14	4	1		1	2	10	3		2	7	50	48
San Francisco, 300,000—month of April....	180	464	18.56	23	11	76	2		15	4	7		4	12	54	37
New Orleans, 210,000																
Washington, 160,000—2 mos. end'g Apr. 30	268	658	24.67	17		7	27	2	5	8	7		10	7	116	131
Pittsburgh, 145,000—5 wks. end'g June 2..	113	234	17.	11	15	3	11	2	22	1	4		3	5	28	26
Newark, 126,000—month of May..	90	232	22.	13		21	14		3					2	31	24
Providence, 103,000—month of May.....	49	160	18.64	7		31			4	1			3	3	32	13
Milwaukee, 101,000—month of May.....	75	161	19.12	6	34	6	11		3				3	1	14	17
Rochester, 70,000																
Richmond, 72,500—4 wks. end'g May 26...	30	90	14.75	3		2				1			2	4	16	12
New Haven, 60,000—month of May.....	28	99	19.8	9		2	1		4	2			2	3	15	9
Charleston, 57,000—4 wks. end'g May 26...	32	83	18.92													
Toledo, 50,000																
Mobile, 40,000—month of April.....	22	64	19.2	6		1					1		2	1	13	7
Dayton, 36,000—month of May.....	11	35	11.66	3		1					1			1	7	7
Nashville, 27,000—month of May.....	19	51	22.56			5			1		1			1	10	1
Wheeling, 28,000—month of May.....	17	38	16.39	3		1	11							2	3	1
Buffalo, 170,000—month of May.....	36	152	10.72	12		1			2	4	2		1	6	17	17
Knoxville, 13,000—month of May.....	4	11	10.15											1	2	
Paterson, 40,000—month of April.....	21	62	18.6	1		2	2		1						13	11
Petersburg, 20,000—4 wks. end'g May 26..	8	28	13.2	6	1								1	1	4	2
Selma, 8,000—month of May.....	3	14	20.00													
Elmira, 20,093.....																
Yonkers, 18,000—month of May.....	3	18	12.0			1	1								6	1
Memphis, 45,000.....																
Detroit, 115,000.....																
Syracuse, 60,000—month of May.....	10	66	13.2	4		1	4				4			1	10	12
Sacramento, 21,000—2 mos. end'g May 31..	30	65	18.57													

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during six weeks ending May 5th, 36,112 births and 24,482 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 11,630. The mortality from all causes was, per 1,000—in London, 25.16; Edinburgh, 24; Glasgow, 27.83; Dublin, 34.66; Portsmouth, 18.16; Norwich, 22.66; Wolverhampton, 22.83; Sunderland, 23.5; Sheffield, 25.83; Birmingham, 29.16; Bristol, 22.66; Liverpool, 27.33; Salford, 33; Oldham, 35.83; Bradford, 23.83; Leeds, 24.83; Hull, 24; Newcastle-upon-Tyne, 26.83; Leicester, 20.16; Manchester, 29.83; Nottingham, 27.83. Other foreign cities at most recent dates, per 1,000—Paris, 28; Rome, 20; Vienna, 33; Brussels, 26; Berlin, 28; Hamburg, 26; Calcutta, 27; Bombay, 60; Madras, 146; Amsterdam, 27; Rotterdam, 31; The Hague, 22; Christiana, 16; Breslau, 24; Buda-Pesth, 42; Turin, 24; Alexandria, 42; Copenhagen, 28; Munich, 36; Naples, 30.

District of Columbia.—Fifth Annual Report of the Board of Health, 1876. One of the most pleasing of our editorial functions is to be able to record *improvement*. We recall our animadversions on the early reports of this Board, with only the same sincerity as those we now make: the difference is, in those we found much to condemn; in this, much to commend. The report opens with a concise description of the unsanitary condition of the District previous to, and at the time, 1871, when a Board of Health was created, whose duty it was "to declare what shall be deemed nuisances injurious to health, and to provide for the removal thereof; to make and to enforce regulations to prevent domestic animals from running at large in the cities of Washington and Georgetown; to prevent the sale of unwholesome food in said cities; and to perform such other duties as shall be imposed upon said Board by the legislative assembly." In default of challenged power under this law, in 1874, the Board secured an additional enactment, explicitly conferring upon it the duty "to make and enforce regulations to secure a full and correct record of vital statistics, including the registration of deaths and the interment of the dead in said District;" and, in the words of the Registrar, "the practical result of the enforcement of these regulations, is to place under the immediate observation the number of deaths occurring in the District, the cause and locality of each, enabling the Board to arrest the spread and progress of epidemics, endemics, contagious or infectious diseases, and promptly abate existing causes of preventable maladies; to secure a perfect registration of marriages, births and deaths, for testamentary evidence; and to bring all cases of death under immediate official observation, for the prevention and detection of crime." With these powers and duties, conferred and acknowledged, the Board submits a record of progress, demonstrating an acquirement and application of sanitary knowledge and administration, which, for the last year, favorably compares with the workings of the oldest and best health organizations in the country. Sanitary inspection has been prosecuted with vigor, and a large number of nuisances of every kind, including "sunken lots," filthy houses, sewer leaks, and the like, abated; night soil and offal have been promptly removed; house and street garbage removed with increasing efficiency; stray animals impounded; dogs, especially, rigidly looked after, 1,917 killed; unwholesome food has been sought out with diligence, and large quantities condemned. The importance of these services is dwelt upon, and short-comings excused for lack of funds; amount expended for the year, $52,235.

Of the 265 octavo pages, the Registrar's report comprehends 206—202 of which are *tables*, exhibiting the ratios of births, marriages and deaths in the various relations of nationality, race, sex, age, condition, classification, etc., with the results, daily, weekly, monthly and quarterly, and the aggregate for the year.

Births reported: 4,285, an increase of 370 over 1875. Ratio per 1,000: white, 22.330; colored, 38.155. Still-births, 379—white, 143; colored, 236.

Marriages recorded: 752, an increase of 58 over 1875. Whites, 348; colored, 404.

Deaths registered: 4,246, a decrease of 106, as compared with 1875. Ratio per 1,000, 26.537.

From zymotic diseases, 1,057 (48 less than in 1875), 24.894 per cent. of total mortality.

From consumption, 595 (an increase over 1875 of 16); of total mortality, 14.013 per cent. The greatest number of deaths from this cause occurred in the months of February and April, and between the ages of twenty and twenty-five.

Deaths of children under five years of age, 2,064, a decrease on preceding year of 123; of total mortality, 48.610 per cent.

"The gradual but steady reduction, year by year, of the death-rate in the District of Columbia, and especially so from zymotic or preventable diseases, since the inauguration by the Board of its thorough system of sanitary labor, can but be gratifying to our citizens, as well as to the whole country. . . The people of the District have enjoyed a remarkable immunity from epidemics of every character during the past year. The careful system of isolation enforced by the Board in all sporadic or imported cases of contagious diseases, together with the system of inspection of premises and warning to families afflicted with infectious diseases, insures exemption from the general prevalence in this community of maladies of this character."

The fishy odor, so common, and yet, hitherto, so unaccountable to stored water, has recently developed in the Hemlock Lake supply of Rochester, and given rise to an instructive report on the subject by Professor Lattimore.* After careful and frequent analyses, he concludes that it is "due to some obscure condition of the algæ—probably to their decay and decomposition." He quotes similar conditions as having occurred at various times in the supplies of New York, Boston, Baltimore, and many other cities. At Nashville, Tenn., the water of the Tennessee River was affected at points very distant from the city. In the great majority of cases the odor seems to be closely connected with the rise of temperature in early summer, but frequently ceasing after the lapse of a week or two. But in other cases it has begun in autumn, and sometimes continued through the winter.

No evidence has been adduced to warrant even a suspicion of such water having any deleterious effect on the health of those who use it.

*Report to the Executive Board of the city of Rochester, N. Y., on the recent peculiar condition of the Hemlock Lake Water-supply, by S. A. Lattimore, Ph.D., L.L.D., Professor of Chemistry in the University of Rochester.

Cistern Water.—In our climate, remarks Col. Waring, in *Scribner* for June, where rain is abundant during a considerable portion of the year, the water falling upon the roof of any house, if properly collected and stored, is ample for the whole supply of the family which that roof shelters. This water as it falls is ordinarily free from any impurity that can affect its taste, and from every source of serious fouling, though after a long-continued drought it is well to divert and discharge upon the surface of the ground the first ten minutes' flow of a shower—so that the impurities of the air and the dust of the roof may be first removed. After this first dash, lead to the cistern all that follows. Even with this precaution the water will be more agreeable for use if filtered. There are numerous systems for making filters in cisterns; but no other is so simple, nor so durable and satisfactory, as the separation of that part of the cistern from which the suction-pipe leads by a wall of brick and cement. It is simply necessary to build a wall of brick set on edge (two and a half inches thick), so as to include about one-quarter of the area of the bottom, sloping it back so as to terminate against the side of the cistern at a height of from four to six feet. This wall should be so well cemented at its joints that water can only pass through the material of brick, and for strength its form should be slightly bulging. A wall of this sort, measuring, say, six feet at its base, and rising to a height of six feet at its highest point, will transmit an amount of water sufficient to supply the demand of the most constant pumping that any domestic use can require.

A sensible editor at a dinner-party, being asked if he would have some pudding, replied, in a fit of abstraction: "Owing to a press of more important matter, we are unable to find room for it."

Cremation of all Table and Kitchen Refuse, which we took occasion to mention in May as a common practice

in our own household, has been curiously elaborated into an inquiry from a correspondent for information on the means we thus use for "destroying offal matter," which we regard as a very different thing—though we have occasionally subjected dead rats, and once in winter, with a full furnace fire, a dead *cat* to the same process, rather than wait forty-eight hours for the *circumscribendi* notifications, common to public service, without any inconvenience whatever. Among the internal rules and regulations of our kitchen, one of the most peremptory is the absolute prohibition of *swill tubs* and *swill gatherers*, and instead thereof, *daily* burning all pea-shucks, corn-cobs, potato-peelings, fruit-parings and the like, together with all greasy table and kitchen scraps, which render the mixture readily combustible. The odors are all carried off with the smoke up the chimney, and with ordinary care for a *good* fire in the range, and *daily* combustion—so as never to have large accumulations—*ashes* only are the convenient result.

Statistics of Deaf-Mutes.—We condense from the *Gazeta Medica da Bahia*, the following statement of the number of deaf-mutes in the different provinces of the Empire of Brazil.

The Empire is divided into 21 provinces and contains a population of about 10,000,000. There are 10,281 deaf-mutes among the free population, and 1,314 among the slaves.

Two facts are very prominent in this Report.

I. The ratio of deaf-mutes is greater in Brazil than in any other part of the world except in Switzerland, where it is one in every 503, while in Brazil it is one in 852 of the inhabitants. In the province of Goyaz it is one in every 221, in Matto Grosso, one in 375, in Santa Catharina one in 378, in Minas one in 842, in Parana one in 700, and in S. Paulo one in 777, of the population.

II. Deaf-mutes are far more numerous in the southern provinces (temperate zone) than in the northern (torrid) and in the western (towards the Andes) than on the coast.

Doctors in the English Army.—According to official documents, the English army has one surgeon for every 202 men, and the civil population only one for every 1,276 inhabitants. The number of doctors, which, in 1851, was 9.7 for every 10,000, was in 1871 only 8.3. In the army there are 49 doctors for every 1,000 men. It is a fact well known that the British government finds it difficult to find competent men to fill the vacancies in the medical staff of the army. As early as 1851 the medical assistance rendered to the population was very deficient and it is not very much better in 1876. To the great majority of the people who are unable to pay large fees, medical attendance is almost entirely inaccessible.

In Ireland the number of physicians was four for every 10,000 inhabitants in 1851, it was five and it was six in 1871. In Scotland, as in England, the number has diminished: in 1851 there were 7.2 for every 10,000; in 1861 there were 6.1, and in 1871 only 5.2. The number of physicians is very unequally distributed, and the poor are attended by ignorant quacks and men without diplomas. These facts have been the subject of inquiry by the General Medical Council during its last session, but no remedy was found. In France the condition of the poor is somewhat different; the number of doctors with diplomas is even less than in England; but the loss is in part supplied by a class of men holding license from the government to attend all but serious cases. These are called *Officiers de Santé*, and in all difficult cases are obliged to call in the assistance of medical men. The people, for this reason, have some protection against charlatans.

Marriage in Ireland.—It has been supposed that the registration of births in Ireland must be excessively defective,

as the ratio of registered births to population is so far short of that of England. But Dr. W. M. Burke, who signs, as Registrar-General, the detailed report on the year 1875, recently issued, calls attention to other returns in explanation of the difference. He has, indeed, to state that in the ten years—1865-'75—the rate of legitimate births, which in England averaged 33.4 per 1,000 of the population, was only 26.1 per 1,000 in Ireland. But he has also something else to state. The census of 1871 showed that in England 14.7 per cent of the total population were married women between the ages of fifteen and fifty-five, but in Ireland only 11.8 per cent., so that there were five married possible mothers in England to four in an equal number of the population in Ireland; and, taking the ages, fifteen to forty-five years, the difference is even greater. Thus the birth-rates of the two countries bear the same ratio to each other as the relative proportion of married women in the population. Looking at the returns from another point, it is found that the births in England are annually equal to 224 to every 1,000 mothers, and the registered births equal to 223 per 1,000 in Ireland. The marriage-rate in Ireland is low in proportion to the total population. This is partly owing to the large annual emigration of unmarried persons of the marrying ages. There is a popular opinion that Irish mothers are more fruitful than those of England; but this, if true, must, under present conditions, be to a certain extent neutralized by the comparatively late period of life at which many marriages in Ireland are now solemnized. The annual excess of births over deaths in Ireland is about 1 per cent. of population.

The Population of Holland, from official reports, January 1st, 1877, was 3,809,325, of whom 1,884,417 were males, and 1,914,908 females, an excess of 30,491. From sources other than official the population in 1870 was 3,579,529, giving an increase during the last six years of 229,798, being 6.4 per cent. of the population of 1870, at which rate the population would be doubled in about 16½ years. In 1870 the number of births was 136,124, and in 1875 it was 144,180, so that in 1870 the births were one for every 26 inhabitants. In 1871 the deaths were 114,234; in 1874, 92,676, and in 1875, 104,479. Thus the mortality has diminished while the births have increased, showing marked evidence of prosperity.

Holland has 3,817 schools, of which 2,688 are supported by the State, and 994 by private patronage; there are also 135 private schools receiving government aid, 1,174 rank as high schools. The teachers were, in 1875, 9,267 males and 2,708 females.

Medico-Legal Society—Permanent Commission.—At the annual election of officers, May 30th, 1877, Prof. William A. Hammond and Hon. Geo. H. Yeaman were re-elected members of the Permanent Commission for three years. Clark Bell, Esq., was elected Chairman, in place of Prof. F. H. Hamilton; Jacob Miller, Esq., Secretary, in place of Mr. Bell, and Dr. Ralph H. Parsons, Treasurer, in place of Mr. Miller.

Errata.—In Dr. CARROLL'S paper on the Plea of Insanity, in our June issue, the algebraic equation on p. 258 should read: "Insanity equal to a b *plus or minus* c." On p. 260, 6th line, for "effective" read "affective."

Sanitary Advertisements.—Much information may be gained by a regular reading of our advertising pages. One may learn what business is being done, how it is being done, and by whom. We take care to exclude all advertisements of a fraudulent character; hence one who reads our advertising pages will not be likely to receive pecuniary or moral injury from so doing, but, on the contrary, be profited thereby.

E SANI

A MONTHLY MA

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. AUGUST, 1877. No. 53.

TUBERCULOSIS IN MILCH COWS, AND THE CONTAGIOUSNESS OF TUBERCULOSIS BY THE DIGESTIVE ORGANS.*

BY A. N. BELL, M.D.

It is well known to physicians abreast with the times, that within the last dozen years or so the study of tuberculosis has received a new impetus, chiefly from the revival of the theory of its infectious nature, first promulgated about a hundred years ago by Morgagni. Buhl and Niemeyer may be regarded as the leaders of modern investigation of the subject in its application to mankind; but contemporary with them, among their own countrymen especially, there have been several other diligent investigators of the nature of tuberculosis from a different, but equally instructive stand-point, whose labors it is the object of this paper to present. For whatever facility with which I may accomplish this object I am in great measure indebted to my associate in literary work, Dr. T. P. Corbally, of Brooklyn, for his aid in translating several papers and letters into English.

The subject seems to have been first prominently brought forward by Professor A. C. Gerlach, of Berlin, under the inquiry: *Is the flesh of cattle affected with pearl-disease, and especially of animals affected with tubercular disease, to be allowed or to be prohibited, as an article of human food?*† Of which inquiry the following is an abstract:

From the time when pearl-disease in animals was supposed to have some relation to the venereal-disease as found in human beings, or, as supposed by some, was identical with it, the use of the flesh of all animals affected with the disease was strictly prohibited. The very natural fear of venereal infection was so great, and the general aversion among the people was such, that official prohibition was demanded to prevent its sale. In tubercle people saw only enucleated or incysted masses of venereal poison, and this idea was most generally associated

* Abstract of paper read before Section on State Medicine and Public Hygiene, Amer. Med. Association, Chicago, June 6th, 1877.

† *Archives of Scientific and Practical Veterinary Surgery.* Published by A. C. GERLACH, Medical Privy Councilor and Professor, Director of the Royal Veterinary School of Berlin. Edited by Prof. C. F. Müller and Dr. J. M. Schütz, Teachers in the Royal Veterinary School. Vol. 1, No. 1. Berlin, 1875.

with tubercles as found in the chest and abdominal walls, but more particularly with the former; all other abnormal conditions might be passed unnoticed; but a couple of nodules found on the walls of the chest, or on the diaphragm, were sufficient to cause the animal to be at once rejected. People feared even to touch the blood or the entrails of such animals, and the butcher's knife was thrown away with the worthless carcass, and, in many cases, even the axe with which the animal was felled.

At what time and for what reason pearl-disease was first supposed to be identical with venereal-disease is not now known. According to Graumann it originated during the last half of the seventeenth century, and this opinion is strengthened by the fact that at about that time the direct prohibition against the use of the flesh of animals having this disease was first promulgated.

As the supposed identity of pearl-disease and venereal-disease was the cause of the prohibition issued against the use of all such food, when this supposed identity was disproved by Heim and Graumann all such prohibition was removed.

Heim—a physicist of Spandau—presented, on the 26th of November, 1782, to the Chief Sanitary Board (Ober-Sanitäts-Collegium), a detailed report on the innocuous character of the flesh of animals having pearl-disease. Graumann, two years later, presented his treatise on the subject, in which he proved that the two diseases were not identical, and showed that the flesh of animals so affected was healthy, and could be safely used as an article of food.

Thenceforth the prohibition against the use of the flesh of such animals as food was gradually removed—in Prussia by the Decree of July 26th, 1785, and in Austria by the Order of July 11th, 1788, and about the same time in other German States, as in nearly all the countries of Europe, so that, at the close of the eighteenth century, its use was without restriction.

The *aversion* to the use of such meat did not disappear so readily, and Viborg states, in his treatise published in 1818, that in 1810 the aversion to its use had little abated, and even in 1818 it was still prohibited in Norway.

With the prohibition of the use of the flesh of such animals as food, there very naturally originated the desire, as far as possible, to prevent the spread of the disease among animals, so that the custom gradually became more prevalent of promptly sending all suspected of such disease to the slaughter-yard. The neglect of proper care in this regard caused at the time and still favors increase in the spread of pearl-disease, observed during the course of the present century.

The fact that pearl-disease was shown not to be identical with venereal-disease did not throw any light upon its real nature. Many opinions were put forward in regard to it; but all seemed to tend towards the conviction that it was either tubercle or sarcoma, or a substance *sui generis*, holding a place between these two. Twenty years ago I considered pearl-disease to be of the nature of tubercle, and my subsequent experiments have confirmed me in the belief that the two diseases are identical, and this opinion I have uniformly defended, although during much of the time I stood almost alone. There could be nothing more natural, therefore, than that I should experiment

with the anatomical products of pearl-disease, especially as Villemin had introduced the question of the transmissibility of the disease by inoculation. Villemin's inoculation with tubercular matter gave rise to numerous and diverse experiments, which culminated in a dispute as to whether tuberculosis was a general or a specific disease.

The inoculation with tubercular matter has been followed by the production of tubercles in the lymph glands and in the lungs, and often in the liver and in the kidneys. The experiments on rabbits and Guinea-pigs had apparently the same results. In these animals, disease that could not in any way be distinguished from tubercle was produced in the same organs by the traumatic process of inoculation. I myself have performed all these experiments with care, and extended them by the introduction of tubercular matter taken from cattle. I have inoculated with tubercular matter taken from men and from apes, and with the matter from cattle affected with pearl-disease, many dogs, a few pigs and a goat, and in every instance tubercles were produced in the lungs, and in some of the cases in the liver and in the kidneys. In rabbits these experiments led to the formation of a thick, cheesy matter at the point of inoculation, and of cheesy masses in the vicinity of the neighboring lymph glands, and to nodules in the lungs, which could not be distinguished from tubercle, but they were in small quantity. In all other experiments on animals—as horses, calves, sheep, goats and pigs—no appearance of tubercle was produced. Those investigators who limited their experiments to dogs and Guinea-pigs came to the conclusion that tuberculosis was not identical with any other disease. They laid down two propositions, which are still held by different investigators: in one the specific and infectious nature of tubercle was defended; in the other this view was denied. This last class of observers saw only numerous points of secondary inflammation, in small or in large masses, which terminated in caseous degeneration, and for this reason was called cheesy inflammation.

It cannot be denied that cheesy substances, even when of traumatic origin, may be infectious; in consequence of this, a tendency to caseous degeneration is established, and then the disease generally spreads. In the lungs are found small masses of round cells, more or less thickly disseminated, or else thick layers, in the form of the so-called infiltration, and in this last case there is more or less pronounced pneumonia—the so-called cheesy pneumonia. The infection of this form of tubercle spreads to other organs—as the liver, the spleen and the kidneys. This has been proved, not only by scientific experiments, but by clinical observation. In swine I have repeatedly observed that following chronic inflammation of the joints, arising from distortion and suppuration, or from caseous degeneration, tubercular and cheesy masses were found in the lungs, ending in consumption, a form which must be distinguished from tuberculosis, notwithstanding the very great anatomico-pathological resemblance between them. Although no marked distinction can be drawn between the products of direct infection with caseous matter and of matter from persons suffering with tuberculosis as an hereditary, specific, constitutional disease, still, their identity has not been established. Even miliary tubercles, which have been considered as characteristic, occur more

frequently without tuberculosis—as, for instance, in glanders, which no one considers to be identical with tuberculosis.

From this stand-point, it occurred to me that the proposition to be resolved experimentally was: Is there in tuberculosis a peculiar virus, or are pearl-disease and tuberculosis identical? and to determine this it seemed desirable to experiment without producing a wound or inducing suppuration. These experiments then led us to a third inquiry: Whether the flesh and the milk of tuberculous animals, especially of cattle affected with pearl-disease, were injurious and unfit for food? a question of the gravest importance in a sanitary and industrial point of view. My first experiments were made between 1866 and 1869, and the results were published in two reports of the Veterinary School of Hanover for 1869, page 127 to 151. I continued my experiments in the Berlin school, after my removal to that city. The experiments with milk from tuberculous cows did not succeed in Berlin, as it afterwards appeared that the animals used for this purpose were not affected with this disease. Therefore I have omitted the whole question of the danger arising from the use of milk from tuberculous cows; when an opportunity offers these experiments will be resumed. The question of feeding animals with tubercular matter, and with the flesh of cattle affected with pearl-disease, was very definitely answered, and the results have already been given in a report to the German Association for the Promotion of Public Health, at their session of June 26th, 1872.

This short historical sketch serves to show how the question which we have here to solve came first to be agitated. The question is in itself one of the greatest importance. If the flesh of diseased animals is injurious to human health, then it should not be used, and its sale should not be permitted by the sanitary police; but such a prohibition is of great importance as affecting industries, and also a question of domestic economy. It must, therefore, be considered with the greatest care, and can be determined only by the most satisfactory and conclusive experiments. The experiments heretofore made have, in many respects, been not entirely satisfactory. A decision, when there is so much involved as there is in this regarding the injurious nature of the flesh of animals having pearl-disease, cannot be hastily made. It is not unnatural, then, that some persons should reject such flesh entirely; while others, adhering to old opinions, should permit its use; and a third party, still in doubt, are unwilling to express a positive opinion as to whether it should be permitted or refused. Such a condition is highly prejudicial for many reasons, and its solution is urgently demanded. Authority cannot decide here; facts must be produced—facts obtained as the result of careful and definite experiment. I will therefore, in making my experiments in feeding tubercular matter from lungs, select the tubercles found on the serous membrane, and in experiments with the flesh of animals affected with pearl-disease; and all experiments made in any other way will be explicitly stated in detail, so that the reader may be in a position to draw his own conclusions from the facts I may be able to present.

Experiments with Feeding.—To simplify the subject, I will classify my experiments under the following heads:

I. Experiments with raw—that is, uncooked—tubercular masses, from cattle having tubercle.

a. With raw fibrous tubercle (*Nodules, Knoten*) from the pleura of animals having pearl-disease.

b. With crude tubercular masses of various kinds.

II. Experiments with raw tubercle from other animals, and from men.

III. Experiments with raw flesh from cattle and other animals having tubercles (pearl-disease.)

IV. Experiments with cooked tubercular substances.

Professor Gerlach states, that the greatest care was exercised in regard to the previous health of the animals to be experimented with. All the animals—dogs, rabbits, swine, cattle, etc.—were taken from the stables and yards belonging to the school; and when a series of experiments was to be made, to insure uniformity, animals from the same family—young pigs, for instance, from the same litter—were selected, and all were in, apparently, the same health and thriving alike. Here follow the details of thirty-eight experiments.

Seldom have experiments led to more uniform or more decided results than those obtained from feeding animals with raw tubercle. These results require no further explanation—a few general remarks is all that is necessary.

I. The following animals were fed with uncooked tubercular substance from cattle: five calves (heifers); four sheep; two goats; ten swine; one Guinea-pig; seventeen rabbits; one horse; four dogs. In all, forty-four mammalia and two doves.

Of the animals thus experimented on, thirty-six became more or less tuberculous, the greater number in a very high degree. One calf was attacked with severe diarrhœa in consequence of the feeding, and died from an aphthous condition of the mouth; in the horse the infection was doubtful; four dogs, three rabbits and two doves were not infected; the last two hardly deserve to be considered, for it is very doubtful if they ate the infecting matter with the grain, as was intended, and then the mere negative results to be obtained from birds should not be brought into comparison with results obtained from experiments on mammalia. The author considers that dogs are generally exempt from infection.

The author's conclusion is, that tuberculous matter is in a high degree infectious.

The question in regard to the identity of pearl-disease with tuberculosis was a purely scientific one. Now, however, through the results obtained from experiments with infection, it has become a very practical and very important one, because of the possibility of communicating the disease to human beings.

II. **Experiments in Feeding with Raw Tubercular Masses from other Animals and from Men.**—Here follow the details of eighteen experiments. The experiments on this point are not entirely satisfactory, so that we can draw only general conclusions from them. They justify, however, the conclusion that the tubercle from other animals is infectious. That tubercular matter from man and from other animals may possess different degrees of virulence.

Besides these general results, two very important scientific and practical facts were developed.

1. That the fresh tubercle from horses, without any traces of cheesy degeneration, is just as infectious as the pearl nodes from tuberculous cattle; that true tuberculosis, as already mentioned, seldom appears in horses, and that the fibrous tubercle found in them has no relation whatever with glanders; that the miliary tubercle found in glanders has nothing in common with true tubercle except the form.

2. That tuberculosis in fowls, especially in the *hen*, is very virulent, and is identical with the tubercles in the mammalia, and sanitary precautions in this respect are very necessary.

III. **Experiments in Feeding Raw Flesh of Tuberculous Cattle and other Animals.**—Of these experiments in feeding, there were ten small pigs, seventeen rabbits and four dogs. Of these, six small pigs and two rabbits were infected, the latter but slightly, while fifteen rabbits and the four dogs were unaffected. This result shows, what might be inferred from the first and second series of experiments, that the *flesh* of tuberculous cattle may convey the infection, although in a less degree than the tubercular mass. As might naturally be expected, the amount of danger to be anticipated from the use of the flesh of diseased animals is greater than from the degenerate tubercle, because of the much greater quantity used.

It is very probable that all parts of the flesh from tuberculous animals is not equally capable of producing the disease. It is pretty certain that flesh containing lymphatic glands has more virus than pieces having no glands. It is certain that the flesh, as well as the milk, contains a greater quantity of the poison in proportion to the extent of the disease; and it is probable that when the disease is local, limited to a particular locality, that neither the flesh nor the milk are capable of propagating the disease. The fact that all the experiments did not succeed in producing the disease, would seem to depend on this circumstance; but this in no wise justifies the inference, that the flesh and the milk of tuberculous animals are not capable of producing the disease.

IV. **Experiments in Feeding Cooked Tuberculous Matter.**—Solid fibrous and broken-down tubercular masses were cooked from one-fourth to one-half an hour, and fed to five small pigs and ten rabbits in considerable quantity; the result was that the five sucking pigs and five of the rabbits, two-thirds of the whole number, contracted the disease. That one pig, which at the expiration of four weeks died of pleurisy, presenting only considerable swelling of the follicles of the mesenteric glands, can be considered as doubtful. The result, however, is not weakened by this exception.

In all these experiments with cooked substances, the animals were less affected (showed less signs of sickness) than those fed with raw matter. Tuberculous matter, cooked from one-fourth to one-half an hour, is undoubtedly infectious, but in a less degree than the same matter given raw.

It is probable that thorough cooking would destroy the virus; but as flesh is a bad conductor of caloric, the centre of a large piece escapes the action of the heat.

The experiments with feeding six calves, six sheep, three goats,

thirty-one pigs and swine, one Guinea-pig, fifty-four rabbits, eight dogs, one horse and two doves, show that the disease affecting our domestic animals and even hens is exceedingly active, may be communicated to human beings, and that tubercle in these animals is identical with that in man. The inference follows, that the use (ingestion) of tubercular substances, even of the flesh and the milk of tubercular animals, is capable of communicating the disease directly.

This—the effect of the milk—Prof. Gerlach has shown, in the Second Annual Report of the Veterinary School of Hanover, November, 1869, and in Klebs' Archives, 1873. If we turn these scientific inquiries to advantage in every-day life, we must lay down the general principle that the flesh of tuberculous animals of all kinds, especially of those that are subject to pearl-disease, must be prohibited as food, for man; and the more so as the flesh of the two species most commonly so used, that of cattle and swine, in which the tuberculous degeneration is most frequently met with, are very frequently, especially in North Germany, used either uncooked or but partially cooked. It must be remarked that sometimes the poison, when it enters the system, is very slow, running its course as a chronic disease.

Professor Leisering, of Dresden Veterinary School, with whom we have also been in correspondence, has sent us a report of experiments on the communicability of tuberculosis, made by himself and colleagues in that school.

"That tuberculosis," he remarks, "is transmissible is a fact well determined in late years by direct experiments; and this has, besides its scientific significance, a practical importance of such weight, that every contribution to the explanation of this, in many respects, obscure subject, is certainly most desirable. And of this class are the experiments in this veterinary school in relation to the transmissibility of tuberculosis."

Fleming, in his recent masterly work on Veterinary Sanitary Science,* besides noticing the experiments of Professors Gerlach and Leisering, in the Veterinary Schools of Berlin and Dresden, mentions several other veterinarians who are similarly engaged, and nearly all show conclusive evidence of the infectiousness of tuberculosis by the digestive organs. Villemin, Klebs and others have also successfully produced tuberculosis in rabbits, Guinea-pigs and other animals, by inoculation with tuberculous matter, and in like manner demonstrated its contagiousness. Chauveau and Saint-Cyr, of the Veterinary School of Lyons, have done the same thing in calves and heifers. Harms and Gunther, of the Hanover Veterinary School, and Bagg, of the Copenhagen School, by feeding animals with the flesh and lungs of a tuberculous pig and a phthisical cow; Zurn, of Jena, in pigs, by first feeding them with the milk, and subsequently with the flesh of a phthisical cow. Viseur, of Arras, has been equally successful with cats. One of these animals, after death, was found to have all the lymphatic glands enormously enlarged, the mesenteric glands increased in size, and the lungs studded with white, hard tubercles. These cats ate the tuberculous matter voluntarily.

* Manual of Veterinary Sanitary Science and Police. Two volumes. London: Chapman & Hall, 1875.

Böllinger has made a series of experiments on goats and dogs, with similar conclusions; and in conjunction with his own experiments and observations he sums up the results of the experiments of Villemin, Chauveau, Klebs, Gerlach, Bagg, Semmer, Gunther and Harms, Zurn, Biffi and Vergad, as follows:

I. Ingestion of tubercular matter derived from man, in two pigs and two rabbits, produced a negative result; in one pig enlargement of Peyer's patches and mesenteric glands, and cheesy degeneration of parts of these.

II. Ingestion of tuberculous matter from the ox, fresh glands, caseous matter, the contents of the bronchi—on five sheep, two goats, four pigs, eight dogs, a large number of cats, twenty rabbits, one porpoise and eight pigeons: negative result with the dogs and cats; result nearly always positive with the pigs, sheep and goats. Most frequently with these animals there was caseous degeneration of the intestinal mucous membrane and mesenteric glands, sometimes the cervical glands and the lungs. In three sheep there was real "tabies mesenterica." With the rabbits, the ingestion of raw tubercular matter produced results sometimes positive, sometimes negative. In one instance the ingestion of boiled tuberculous lymphatic glands engendered general tuberculosis; but, on the other hand, boiled tubercles had no injurious effect on five rabbits. And a pig fed with the same material only exhibited, after death, tumefaction of the mesenteric glands. Cooked or uncooked tubercles, given to other rabbits, infected them; and the ingestion of tubercles from an ox infected a porpoise, but had no action on two pigeons. The ingestion of caseous pus alone had no effect on sheep.

III. Ingestion of flesh from tuberculous oxen, or those artificially infected, positive results in three pigs, general tuberculosis in lymphatic glands. In one pig, leucæmia, scrofula and tuberculosis. Result always negative with rabbits, when fed with raw or cooked flesh.

IV. Ingestion of milk of tuberculous cow: three pigs, three calves, one sheep, two goats, two cats and fourteen rabbits. In the three pigs, miliary tuberculosis and lesions analogous to those of scrofula; in the two cats, a negative result; a positive result in two rabbits; a negative result in fourteen rabbits fed with the boiled milk.

Tuberculosis has long been known to be a no less universal and fatal disease among domestic animals, especially those of the bovine species, than among mankind, and for the most part the conditions of its prevalence are the same in both. Nobody doubts its hereditary character; and in domestic animals, as in the human race, its subjects are characterized by their attenuated figures, long limbs, narrow chests, lymphatic or neuro-lymphatic temperaments, and they are alike the product of cold, damp places, dark, filthy, unventilated dwellings, insufficient food in quantity or quality, and, in adult females especially, prolonged and excessive lactation, or the progeny of those who have been subject to the conditions herein described.

As representing these conditions in their highest degree of intensity among milch cows, the following is an example:

May 23d, 1877, a party from New York, consisting of Mr. Henry Bergh, President of the Society for the Prevention of Cruelty to Ani-

mals; Dr. Janes, Assistant Sanitary Superintendent of New York; Mr. A. Berghaus, Chief of Frank Leslie's staff of artists, and four or five police officers and other persons, visited certain cow stables in the outskirts of Brooklyn. At the first one, at Blissville, one poor white cow was seen with both eyes nearly destroyed by ophthalmia, caused by ammoniacal gases being continually generated under her body. The full proportion of stump-tailed animals were seen and a great number without teeth.

The section in which the poor beasts are compelled to stand from one year's end to another is on the average two feet and eight inches wide by six feet long. The height is six feet. Some slimy swill was standing in the troughs, and one of the myrmidons informed Dr. Janes that it had been there since early in the morning. Into it the thermometer was plunged. The temperature was 102 degrees Fahrenheit. Another specimen of the swill gave a temperature of 109 degrees Fahrenheit. The swill, as it ran into the vats, was boiling; one of the officers plunged the thermometer into the filthy mess, and the glass was fractured by the heat.

After leaving Blissville, the party proceeded to the dens on the corner of Marcy Avenue and Floyd Street, Brooklyn.

Twenty-eight cows were here confined in one shed which is only a little over seventy feet long. They were fastened with ropes about their necks, to which there were chains six inches long. When the poor animals lie down they go through a sort of hanging process. In another shed, not much larger, there were fifty-one head of cattle. Seventy-nine steers were found in a shed that measures seventy-two by fifty feet, and is filthy enough to turn one's stomach—sea-sickness is preferable to it. The cattle are kept here and fattened on swill by one Block, who keeps a slaughter-house in New York.

Several wagons were seen about the place, all bearing the inscription, "Pure Milk."

A visit was next paid to the Brooklyn Board of Health, and the following conversation took place between Mr. Bergh and the Secretary of that body:

Mr. BERGH—Mr. Secretary, I and my associates have been visiting some swill milk dens in your city, and have called to see if your Board intends to take any action in the matter.

Mr. SECRETARY—What ones have you visited?

Mr. BERGH—We have been to the establishments at Blissville.

Mr. SECRETARY—Oh, they are out of our jurisdiction.

Mr. BERGH—They are. Well, we have also paid a visit to the filthy pest dens of Ehlers, and I think they are in your district.

Mr. SECRETARY—Yes, they are in our district, but everything is nice and clean about them.

Mr. BERGH—Everything is not nice. We have just left there, and a more filthy place I never saw in all my life. If the Inquisition should be revived, and if that body should endeavor to institute some means of torture for cows, they could not hit upon a more severe and outrageous plan than the one that is practiced daily at the beastly places in question. The proprietors violate the law daily in feeding their cows distillery waste. I have the law here and will read it to you. The act passed by the Legislature in 186—

Mr. SECRETARY—Oh, that law has been abolished as far as this country is concerned.

Mr. BERGH—Well, then, here is another.

Mr. SECRETARY—When was that passed?

Mr. BERGH—At the same time. I presume that this has been abolished too?

Mr. SECRETARY—Yes, sir; all the laws passed prior to June 21st, 1875, at which time this Board was created, were abolished by the creation of this Board.

Mr. BERGH—Then you have no State laws on Long Island, and these swill people can do as they like?

Mr. SECRETARY—No; we do not allow them to keep cows without a permit from this Board.

Mr. BERGH—I don't believe I can do much good, then.

Mr. SECRETARY—No, sir; I don't think you can, for we are endeavoring to do all we can, and we can't do much.

Mr. BERGH—Very well, sir. My province, I am fully aware, is only the animals; for if the people prefer swill milk, I have no right to interfere with their taste.

Mr. SECRETARY—I prefer Orange County milk myself, and shall endeavor to keep the swill milk traffic within bounds; but we have very hard work to do it. Only last week we convicted a man named Luke Flannagan, on the corner of Thirty-ninth Street and Third Avenue (Brooklyn). It is hard work to convict these fellows, for we are obliged, when one judge discharges them, to re-arrest them and take them before another judge. Sometimes the judge suspends sentence after they are convicted, and we are virtually defeated.

Mr. BERGH—Well, sir, as all the laws are suspended in Brooklyn in regard to the swill milk establishments, I will go home. Good day.

The party then withdrew and returned to New York.

With a knowledge of these conditions, and with the hope of adding somewhat to the reasons for their suppression, some six months ago I secured a privilege with an offal contractor, of making post mortem examinations of cows. Since which time, of eleven examined, ten evidently died of tuberculosis of the lungs. The other one, which also had the disease, incipiently, died in first calf-birth. One of them was of a choice breed, imported at a cost of about $500; she had been carefully kept in a small, dark and close stable, and allowed but little exercise. All the rest were from stables such as those above described. These eleven examinations are too limited in themselves for the elucidation of any doctrine; but, taken in connection with the testimony from other sources, and the conditions common to city cows, they are suggestive of dangers worthy of the most serious consideration. That the milk of cows affected with tuberculosis is likely to induce that disease, usually commencing as intestinal catarrh, is not only rendered probable by the experiments cited, showing that it has this effect when fed to domestic animals, but this evidence receives additional strength from the prevalence of fatal intestinal catarrh, common to infants fed on cows' milk, in most American cities.

From a physiological stand-point, all observers appreciate the important difference which exists in regard to the requirements of nutrition between the young of all animals and those of mature

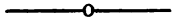
growth, and in none is it more marked than in the human species. In infancy, and throughout the growing period of life, not only is it necessary to repair the waste of tissues constantly going on in the young as well as in the old, but the frame has to be built up to the degree of development it is destined to reach. To meet this demand on the part of the animal economy, is the foundation of the enormous appetites and rapid digestion common to the young of all animals. Every organ of the body, in addition to sustenance, appropriates the additional amount of nutriment necessary to give it required bulk. The current of nutritive life in the young is, therefore, an exceedingly rapid one, and the especially remarkable feature of it is, that the blood itself, from which the organism is built up, receives its impressions and modifications—its constitutional predisposition—chiefly from the nature of the food during the growing period of life. Such, indeed, is the main foundation of the so-called "hereditary" diseases, for it is well-known that the offspring of progenitors with well-marked constitutional tendencies may often have their hereditary tendencies wholly overcome, and a radical change effected, by a change in the quality of the nutriment and the physical surroundings; and, on the contrary, the offspring of those possessed of the highest degree of physical organization may be dwarfed to the lowest degree of degeneracy, by withholding the necessary conditions of healthful development, or by subjecting them to poor food and a vitiated atmosphere.

That city cow-stable milk is peculiarly liable to produce diarrhœa, debility and marasmus in infants is well known; but that such fatal affections are *probably due to localized tuberculosis, communicated through the milk upon which they are fed,* appears hitherto not to have been suspected.

Among the observations now adduced, there appear to be many facts which show that the cohabitation of phthisical cattle with the healthy is a sure means of extending the infection, the expectorated matters of the diseased being the probably active agent. Alsace quotes evidence to the effect, that not only is the disease communicable from phthisical cattle to the healthy, but that stalls and stables may become so infected by animals affected with tuberculosis, that they will infect sound cattle which afterwards may inhabit them.* Facts also demonstrate that tuberculous matter preserves its virulence through three or four removes, and that successful inoculations have been made with tubercular matter from a patient who had been dead for thirty-six hours, and with *sputa* which had been in a dried condition for twenty days. In experiments on animals, it was found to produce no effect after having been boiled, provided the boiling was thorough. Villemin is of opinion that transmission of the malady in the human species takes place most frequently by the dry expectorated matter being accidentally reduced to powder and carried by the atmosphere into the lungs. Some veterinarians believe that it is communicated by forage, soiled by the expectorations of diseased animals and consumed by the healthy. It is in some respects anomalous, perhaps, but nevertheless true, that in the marked progress of public hygiene in recent years, veterinary sanitary science has been the

* *Recuil de Méd. Vétérinaire*:—Fleming, Vol. II, p. 390, 391.

vanguard, and chiefly because people are wont to respond with more alacrity and with greater liberality for the suppression of an epizootic among their horses or a pleuro-pneumonia among their horned cattle, than for the arrest of small-pox or the prevention of cholera infantum. Individuals, communities and States will make liberal appropriations to improve the breed of stock or contribute to the contest for a prize at a dog-show, while they will refuse assistance or oppose a tax for the admission of air and sunlight into a stunting school, or for the drainage of a marsh which by its emanations is a perennial source of human degeneracy, disease and death. It is therefore fortunate, that in the progress of veterinary sanitary science, it has been discovered that many of the most fatal and loathsome diseases which afflict the human race are equally common to—if, indeed, they do not actually take their rise from and originate in—domestic animals inhumanly treated. Scrofula, small-pox, syphilis, malignant pustule, hydrophobia, trichinosis and tuberculosis are examples; and, consequently, veterinary sanitary science may well be regarded as the right arm of public hygiene.



Kindness to Animals.—It pays to treat domestic animals kindly. There is no animal so stupid as not to know the difference between kind and unkind treatment, and none so vicious or ungrateful as not to respond in kind to the hand that pets and caresses it. The vicious horse has almost always been a timid colt, and required only kind and gentle treatment to drive away fear and establish confidence, to render him docile.

It is the nature of all animals to resent ill-treatment, even from one of their own species, and to fight when imposed upon. Thus the horse will return a kick or a bite, while the horned animal will do battle with the arms with which nature has furnished it.

A timid and spirited colt is very naturally and rapidly changed into a vicious and unmanageable horse by rough and unkind handling—and the timid heifer, by the same treatment, becomes an ugly, hooking and kicking cow. Domestic animals recognize kind words as well as kind acts, and a cross word at a critical moment will bring fight and determined opposition, where a kind word would have calmed fear and subdued anger. In handling domestic animals, that man is the most successful who governs his own passions. With domestic animals, kindness begets kindness, and passion begets passion.

SANTA BARBARA AS A HEALTH RESORT.

Santa Barbara, California, May 10th, 1877.

To the Editor of THE SANITARIAN: "Invalid Physician," a correspondent of the *Medical and Surgical Reporter*, Philadelphia, in its issue of April 14th, page 341, does this place an injustice, or in a sojourn here of four months, I, "an Invalid Physician" myself, am not capable of judging, after visiting almost every place of note as an invalid resort in middle and southern California. I have great respect for the opinion of "Prof. Alfred Loomis, of New York," and others of like standing in our profession, and in consequence of such opinions as he gave the writer of the above-mentioned article, when on the eve of starting for this State: "I have examined the record of Santa Barbara, and it is bad. Keep away from there," or words to that effect. I came prejudiced against this place, and visited it only as a matter of curiosity, and as a correspondent of the *Winona Republican*, Minnesota, expecting to report no more favorably upon it than the above-mentioned writer has done, who, as I understand from his article, has not visited this place in person; and as I, speaking from personal observation, fully agree with him in the good word he speaks for San Diego and the adjacent country, I think he would endorse what I say of Santa Barbara and vicinity, including Nordhoff in the Ojai Valley, had he spent the months of January and February here.

During the time, including both months, Santa Barbara neither had "its share of rain," nor was it the "home of fog;" neither did "perceptible moisture clog its morning atmosphere," nor were "its evenings chill" to a greater degree than San Diego or Los Angeles. In order to judge of the portions of the year not having come under my observation, I have applied to persons and examined records of undoubted reliability.

All those consulted, either in person or through their records, now living, or those having prolonged life by a residence here, but now dead, came, and, as I have done, remained, because they preferred it, being equally free to have selected any other place in the State or elsewhere.

Almost any desirable peculiarity—either in climate or geographic location, from sea level to 3,500 feet of altitude—for invalids can be obtained in Santa Barbara and vicinity. If the coast is found too cool and damp, as it is at times during the months of March, April and May, by going back from two to six miles from the ocean, numberless sheltered nooks can be found, among the foot-hills, in the cañons or on the mountain side, where the air is both warmer and dryer.

The middle of the "warm belt" is said to be somewhere between 200 and 600 feet above sea level, in which the old Mission of Santa

Barbara is situated, it being 300 feet above the ocean and two and one-half miles distant therefrom; yet it does not receive the full benefit that the altitude should give it, in consequence of a peculiar geographical north-west wind which occasionally visits certain exposed localities. But, by going from one to three miles farther from the coast, that wind is avoided.

At the summit station in the San Marcus Pass, on the stage road over the Santa Ynez Mountain, at an elevation of about 2,500 feet, the air is so dry during the summer season that invalids can camp out and sleep upon the ground. Dr. E. N. Wood, a gentleman of culture and experience, whose life in a hopeless decline, pulmonary phthisis, was prolonged several years by a residence in this valley, spent a portion of the last year of his life camping out in that picturesque locality, with great satisfaction to himself. He frequently preferred taking his blankets and sleeping in the open air just outside the door of his tent.

If a hot and very dry climate is sought, the Ojai Valley will furnish the desideratum. It is a basin enclosed with a rim of mountains. Nordhoff is the only village in the valley, and contains two hotels and several boarding-houses. Is fifteen miles from the ocean and forty-five from this city by the present road, but will soon be brought within thirty miles by a road shortly to be opened. Altitude of Nordhoff, 900 feet. Prof. Bennett, of the University of Edinburgh, writing of phthisis pulmonalis, says: "Much has been written of climate, but the one which appears to be best is that which will enable the patient to pass a few hours every day in the open air without exposure to *cold* or vicissitudes of temperature on the one hand, or the *extreme heat* on the other," or words to that effect.

I know of no geographical boundary of the same number of miles that so fully complies with the above requirement as Santa Barbara, with her sheltered nooks and the Ojai Valley. As proof of what I have said, so far as it pertains to this city, I give the following summary of a daily record kept for one year, by L. Bradley, Esq., of Aurora, Ill., who came here for a temporary residence on account of advanced phthisis, he having had severe and frequent hemorrhages. "During the year there were 310 pleasant days, in which an invalid could be out-of-doors five or six hours each day with safety and comfort; 29 cloudy days, upon 20 of which an invalid could be out-of-doors for a short time; 12 showery days, upon seven of which an invalid could be out an hour at a time several times each day; 10 windy and five rainy days, confining an invalid to the house the entire day." The time of observation extended from Feb. 1st, 1876, to Feb. 1st, 1877. Since all Mr. Bradley's pecuniary interests are in the Eastern States, the charge of "interested in it," made by the writer referred to, cannot apply to his statements. Through the kindness of L. N. Dimmick, M.D., formerly of Ottawa, Ill.—a phthisical invalid unable even here to pursue the active duties of his profession, but who has been for five years a most diligent and trustful observer and recorder of events that pertain to this place as a sanitarium—I am permitted to draw liberally upon the material furnished by his records and note-book. He says: "The average temperature for three years has been, at 7 A.M., 58°, at 2 P.M. 69°,

and at 9 P.M. 57°; showing that midday was 11° warmer than morning, 12° warmer than evening. The following are the days in each year mentioned during which the temperature fell below 43° above zero and rose above 83°:

1873	below 43°	on	7	days,	above 83°	on	1	day.
1874	"	"	9	"	"	"	6	"
1875	"	"	4	"	"	"	22	"
1876	"	"	17	"	"	"	4	"

Average below 43°, 9¼ days; average above 83°, 8¼ days.

"The mean relative humidity for the year ending April 1st, 1877, was 69.41," which compares favorably with that of San Diego as given by the above-mentioned correspondent at 72.4. Carrying the comparison of the relative humidity beyond the Rocky Mountains, the showing is still more favorable for Santa Barbara:

Mean Relative Humidity for Santa Barbara, 69.41 per cent.
" " " " Philadelphia, 80 per cent.
" " " " New Orleans, 83.50 per cent.

And taking a still wider range for the difference in the mean temperature of the months of January and July, the comparison is no less favorable.

Mean temperature of January and July:

	Jan.	July.	Difference.
Santa Barbara, Cal.	53.25	68.20	14.95.
San Diego, Cal.	53.55	70.32	16.77.
St. Augustine, Fla.	56.79	80.91	24.12.
Jacksonville, Fla.	55.51	81.73	26.22.
Akin, Geo.	47.05	79.91	32.85.
Galveston, Texas.	51.55	84.42	32.87.
Denver, Col.	26.57	72.68	46.11.
Algiers.	52.	75.	23.
Mentone	40.	73.	33.

Blodget's Climatology has furnished part of my data, and the balance is from sources no less trustworthy. By census of Santa Barbara County, taken from the records in the Court-house, in 1870, the population was 7,984, in which the number of deaths form consumption, phthisis pulmonalis, was only five, or one death by consumption in 1,596 of a population. The number of deaths from all causes was sixty-three, so that a little less than one-thirteenth of the mortality was from phthisis. The total mortality was one in 126 of the inhabitants of the county. This was before the tide of invalid immigration had fully set in, and gives a fairer showing as to the climatic effect upon phthisical patients than at a later day, when so many come in the far-advanced stages of the disease, beyond the remedial agency of climate or anything else. But if there is hope, it is to be found in Santa Barbara or in the valley of the Ojai, on the plains of Anaheim, the historic valley of San Gabriel, so graphically described by the above-mentioned correspondent, as I can bear testimony from personal observation.

Santa Barbara is free from that extreme heat that so frequently increases the colliquative diarrhœa or disease of the bowels so often accompanying phthisis; and fever and ague, or other indigenous malarious diseases, are unknown. During what months of the year a sojourn here on the coast will be most beneficial to the invalid, phthisis, or

whatever it may be, he must determine for himself—first, upon the advice of those having made the subject a study, and secondly his own personal experience; for what is beneficial to one may not be to another, although apparently in the same condition. But as a rule the spring months, March, April and May, are *most variable*, and have more unpleasant days than other portions of the year. At this season many invalids seek the Ojai Valley, which furnishes a most pleasant and beneficial retreat for those afflicted with a sensitive condition of the mucous membrane of the air passages. A few remain in the valley during the summer, while others prefer to spend the year in Santa Barbara, enjoying the unusually good hotel accommodations of this city. All seasons of the same months are not alike; but the past January and February, as I found them in the city and vicinity of Santa Barbara, were most delightful, combining all the climatic advantages that any place could offer the nervously-depressed invalid, either from phthisis or any other cause.

A. B. STUART, M.D.,
Formerly of Winona, Minnesota.

———o———

The Eucalyptus.—The *Pacific Rural Press* gives a résumé from the *Revue des Deux Mondes*, written by the French naturalist, M. Planchon, of some items of interest relating to the Eucalyptus, now extensively planted in California and in some of the Southern States:

"While the *Eucalyptus amygdalina* attains a height of 145 to 152 meters (473 to 496 feet), the dome of the Invalides in Paris is only 105 meters high, the Cathedral at Strasburg 142 meters, and the Pyramid of Cheops—the highest building in the world—146 meters. The *Eucalyptus globulus*, although not attaining to the height of the *amygdalina*, is still taller than the celebrated California tree, the *Sequoia gigantea*. It is cultivated on a large scale at the Cape of Good Hope, the southern coasts of Spain and France, the Island of Corsica and especially in Algeria. In Paris it is customary of late to place young specimens of the tree in public squares as a movable summer decoration; and so much is its peculiar form and blue color admired, that the inhabitants are quite sorry when, as winter approaches, the plant has to be removed to the greenhouse. In Valencia (Spain) the vulgar name for it is the fever tree. A few years ago a Spanish gardener, visiting Paris, was shown the tree as a novelty. He remarked that it was already a popular specific against fevers amongst the peasants of Valencia, and that it had even been found necessary to plant a guard at the fever tree to prevent its leaves from being stripped." M. Planchon concluded by saying that it is a rare example of a tree indigenous to Australia which has been established in Europe, Asia, Africa and America, by right of its utility and beauty.

CRIMINALITY.

By W. G. Stevenson, M.D.

Proceedings of New York Medico-Legal Society, May 2d, 1877, Prof. F. H. Hamilton, M.D., LL.D., President, in the Chair.

The evolution of humanity ever has presented problems to be solved and phenomena to be interpreted; and eager minds, in all ages, have striven to obtain the key which would unlock the mystic laws of creation, and reveal to man the rule which directs his actions and defines his responsibilities.

To gain this goal the struggle of the human mind has been long and arduous, and the sources of knowledge as many and varied as have been the answers given or results obtained.

Ignorant alike of his origin and destiny, unable to comprehend the relation he sustained to external nature or to interpret her phenomena; impotent to resist the influence of the unseen but mighty forces which constantly displayed themselves in his presence—man recoiled in terror, and in abject fear prostrated himself before the power which exhibited itself in such majestic but terrible grandeur.

He ascribed to these blind forces personalities, and supplicated them as gods, to gain whose smiles or shun whose frowns an ignorant humanity propitiated by offerings and sacrifices.

Thus was erected the shadowy structure of mythology, whose foundation-stone was ignorance, and whose framework was composed of the capricious imaginations of an infant age.

But as by observation and experience man learned to know the truth, and thereby to dissipate the superstition of the past, so, by the accretion of knowledge, he began slowly but surely the demolition of this delusive structure, and it tottered to its fall. Yet, as the light from a distant star is visible for a time, even after the star substance is blotted from existence, so the shadow cast by the colossal illusions of primitive man has come fleeting down the ages, leaving on all distinct impressions, and even tinging the present with its phantasmagorical character.

The human mind, no longer a blind worshiper, but an intelligent interpreter of phenomena, has made many and important discoveries in the realms of nature. No longer do the patristic doctrines, with their false cosmogony, influence and deceive the world. Science, as now interpreted, takes measurements of infinite space and inconceivable magnitudes; analyzes stars and nebulæ, and determines the forces which aggregated suns and hurled the planets onward in their orbits; it probes the earth, and from its secret depths takes evidence of time infallibly demonstrating the æons necessary for the forming of the earth and developing the life thereon; it grapples with power, and makes the universal laws of nature subservient to its purposes.

The correlation and conservation of forces are established, and give to heat, light and electricity a common origin.

From the swinging of the pendulum and the rush of worlds in space; from the dew-drop sparkling on the blade of grass and the wide expanse of sea; from the light which flashes through the heavens, kissing the earth in gladness and with such delicate tinges touching the hills and vales, lavishing beauty and perfume upon their trees and flowers; from the crystal whose fixed axial ratios give to each variety definite and invariable form, building in strength the foundations of the earth; from the organic cell of the fungus, so lowly and humble in life, and the organic cell whose action produces man and evolves human thought—from all these, yea! from everything in nature, there is evidence of invariable law, whose action fills the world with music both rhythmical and sweet.

Man himself is of, and belongs to nature, and his every action and thought are in obedience to vital laws.

True it may be that the problems of his own existence are more complex and difficult of solution than those of inorganic nature; but nevertheless they are within the domain of law, which is universal, and ceaseless in its workings.

We see all the displays of nature bound in the chain of cause and effect. We acknowledge the obedience of man to law in all the manifestations of bodily function. And now let us ask, with a sincere desire to know the truth, if there is not some rule or law which influences the acts of man, and, in proportion to this influence, are not his responsibilities under law directly modified thereby?

It is man's prerogative to make inquiries of things around, to investigate, explore and learn; he does indeed believe before he knows, but his belief is ever mingled with doubt; the doubt, not the belief, stimulates him to research; and research, by increasing knowledge, vanishes doubt and thereby changes belief.

It was doubt as to the relation of things which first evoked the spirit of inquiry, and impelled man to interrogate and thereby learn the truth. His inquiries established facts, and facts accumulated through continued inquiries, till now he knows the world is ruled by laws so fixed and immutable, that the human mind not only measures back the flight of ages, solving the mysteries in the morning of the world, but with prophetic vision sees and demonstrates much that is to be in the distant future. And yet the human mind is finite, and there are limits to its searchings; it cannot penetrate the veil which hides creation from its view, nor fathom the mysteries of "that undiscovered country from whose bourne no traveler returns."

The primal source and essential nature of matter in its varied forms —of energy, whether physical or vital—are as yet an incomprehensible mystery.

In studying the philosophy of human action, I fully recognize the limited extent of exact knowledge relating to the union of body and mind, and their mutual influence on each other; but I also am aware of the many facts revealed by studied observation and experimental research in nervous physiology, and entertain no doubt that the evidence is sufficient to enable us to determine, with approximate ac-

curacy, at least, the bodily and mental conditions which give the bias to individual character.

No method based on introspective deductions can ever give a satisfactory interpretation of mental phenomena, any more than the same method can account for the phenomena of the physical universe—because the evidence evoked from the depths of human consciousness can furnish no perfect standard by which to measure the conditions of human action.

This will appear evident, when it is remembered that the value of self-consciousness depends largely, if not entirely, on the amount of knowledge possessed by the individual, for without knowledge there can be no correct interpretation of facts; and since the acquisition of knowledge differs in every individual, both in quantity and quality, it necessarily follows that the interpretations of self-consciousness must present widely different results, and be destitute of any positive value.

We must therefore appeal to the evidence derived from the examination of particular cases, and only generalize into laws or rules of action after observations have established facts as data for conclusions.

Investigation has abundantly demonstrated, as a fact of primary importance, that nerve tissue is essential to the production of, at least, the higher phenomena of animal life, and that these phenomena vary in degree and character in proportion to nervous development.

From the lowly forms of animal life, whose nerve centres produce only reflex action in its simplest expression, upward through every series of progressive development, with the super-additions of nerve centres, which add to the complexity of nerve function, there is accumulated evidence that every such additional centre but furnishes a source of new power, potentially capable, within certain limits, of modifying the action of the subordinate centres, yet, nevertheless, incapable of wholly negating their specialized functions.

Thus the organic nerve cell presides over nutrition, and, so far as the simple vegetative growth of an animal is concerned, its action is all-sufficient; but in order to connect simple organic growth with the phenomena of animal life, an additional centre of force is needed, and there is evolved the reflex centres of the spinal cord, which unite vegetative growth with animal action.

The sensory centres being next evolved, there is the possibility of sensory added to organic and reflex action.

But there is no consciousness of life, of motion or sensation; evolution goes on, and the brain becomes the conscious centre of that energy which presides with such mysterious power over the thoughts and actions of man.

To fully understand the functions of the brain necessitates a knowledge of the functions of the spinal and sensory centres, for there are many acts performed by man which bear the semblance of conscious volition, and yet, when correctly interpreted, give evidence of automatic action only of the reflex centres of the spinal cord and sensorium.

Although a few cases are known in which limited nerve action resulted without the existence of the proper nerve elements, as fibres and cells, with their prolongations, yet it is an accepted fact that nerve force only exists within the boundaries of the nervous struc-

ture, and that this nerve force is generated not only in the cells, but also in the fibres, as seen when at rest; oxygen or strychnine restores nervous energy after its complete exhaustion in a limb removed.

Nerve force is not generated by any volitional effort. As magnetic, frictional and statical electricity are only different forms of expression of the same energy, so a simple impression, sensation, ideation, emotion and volition are but different forms of expression of the same nerve force, and come from the special molecular structure of the organ through which they are manifested. This unity of nerve force precludes its intense expression in more than one way at a time, so that if there is great bodily fatigue, mental work is impossible, and *vice versa;* neither can volition hold full sway in the presence of deep emotion.

Nerve energy is transformed into motion, as evidenced in muscular action; it is also transformed into heat, but it is not known whether this is an immediate or secondary result. There are a few instances recorded which seem to show its transformation into light, and it is well known that in certain animals electricity is the direct result of its metamorphosis. From these data the conclusion seems authorized, that at least a partial correlation exists between the physical forces and the energy resulting from nerve action. I say a partial correlation—because, while the evidence may permit the conclusion that nerve force is transformed into motion, heat, light and electricity, it does not justify the conclusion that these can be re-converted into nerve force.

It is important to remember that the character of nervous and mental phenomena is determined by the condition of the nerve centres, whether the condition is one of development of the centres themselves, or of modification by disease, or by foreign substances.

The existence of the spinal cord alone predicates the possible existence of automatic reflex action, which, though unconscious, gives evidence of the use of means to a special end. Add to the spinal centres the medulla oblongata, and there results the involuntary and unconscious co-ordinate muscular movements of respiration, swallowing, coughing and simple exclamation. Unconscious sensations of pleasure and pain, of taste and hearing, come by the addition of the annular protuberance, while the tubercular quadrigemina alone give visual power. The cerebellum co-ordinates the muscular movements of the eye, while the cerebrum not only determines the nature of the mental life, but it alone is able to bring the varied sensations of nervous action within the domain of consciousness. The existence of these several general centres is therefore necessary in order that the many acts of human life may be performed, and, as a necessary corollary, it is found that in proportion as any centre is undeveloped, diseased or modified, nervous or mental action will be changed, limited or arrested.

That mind is influenced by and is dependent on the physical condition of the brain, is again evident, when it is remembered the effect caused by a poisoned blood on all mental expressions. Hashish, opium or alcohol, for example, weaken the will, exalt the automatic action of the brain, disturb perception, exaggerate self-consciousness, distort the emotions, dethrone reason and cause moral turpitude,

diminish the normal blood supply to the brain, and the mind instantly changes its character; restore the needed amount, and the mind promptly responds to the altered condition.

Old age, injury, fatigue—anything which impairs the normal nutrient action of the nervous centres of thought—directly modifies intellectual and moral manifestations; and the conclusion is irresistible, that every psychical manifestation has a physical antecedent; that cause and effect are as certainly established within the realm of mind as of matter. To explain the "how" and the "why" of mental action as a result of physical conditions is impossible. So, too, is it to explain how electricity comes from the union of metals with an acid; or how life springs from a seed, or perfume from a flower—they are ultimate facts, and as such are beyond the boundaries of explanation; but, however complex the problem, the fact remains that definite conditions invariably produce definite results, and there is no more reason why a divorce should be given in the one case than in the other.

In solving the problem of criminality, it is my purpose to rely chiefly on the evidence of nervous physiology; and while I shall not be able to present in detail the many facts at hand relative to mental phenomena, I shall nevertheless endeavor to cite such as may be needed to sustain the position that criminality is a neurosis, originating in either an inherited or an acquired condition of the brain—whether it be a condition of positive disease or of non-development of certain faculties—the existence of which would preclude the possibility of crime.

At the very threshold of the inquiry, it is important to know the relative qualities of men in those things which pertain to their acts in life, for if equality exists, it is evident that we may the more easily formulate a rule by which to measure human action; whereas, if equality does not exist, it is apparent that we must measure each person's acts by some standard of his own, with special reference to his individual organization and surroundings.

The question of equality may be considered from the dual standpoint of actuality and possibility; that is, are men equal in physical and mental endowments, or, if not, are they capable of being equal in the attributes of either body or mind?

As to the first proposition, the actual equality of men—I will only say that the negative is so self-evident as to need no demonstration; we have only to look around us anywhere and everywhere, and the fact becomes glaringly evident, that in physical prowess, at least, a great inequality exists; that which one person is unable to perform even when under the influence of well-regulated discipline, another easily accomplishes, and we correctly impute to him a greater natural strength.

Each individual link in the great chain of human life has potentially a specific, a personal strength, which is measured by the amount of tension or strain each can endure—or, in other words, the amount of active energy each is capable of exhibiting. This inequality of energy, whether active or possible, extends beyond the physical into the intellectual and moral nature of man.

The actual existence of intellectual and moral inequality is even more marked than the physical. Between the intellectual standard

of the untutored Australian negro and that of a Newton or a Shakspeare, or between the moral standard of the most depraved criminal and that of a St. Paul, there are as many varieties as there are individuals of the race.

There is also an inequality of possible power in the mind, as well as in the body.

Each individual of the human race possesses a certain brain organization, which will admit of intellectual and moral development to a certain degree; but no discipline, no method of education, no power of the will, can advance it beyond this limit; thus far and no farther, is the dictum of creative energy.

The eye has vision only within the limits of the visible spectrum, beyond which all is darkness, and the ear can discern sound only when the vibrations are within well-defined boundaries, and beyond certain octaves the harmony of music is lost in the discords of noise, or the vibrations may be so rapid that nerve tissue is powerless to convert them into sound; and yet that which may prove the limits of the visible spectrum or measure the power of audition to one person, may not to another; and we know that certain animals can see where all is darkness to man, and hear sound when, to the human ear, all is silence. So, too, with the human brain—one is capable of receiving and assimilating certain impressions of a specific nature, by which a definite character of mind is formed, while another is so organized as to receive and assimilate impressions different in quantity and quality, and there results a mind of peculiar endowments and powers. And here it is important to observe, that the reception of impressions by the brain does not of necessity predicate the nature of their assimilation; for as the different elements of food to the general system are selected and assimilated by different tissues, and produce bone, muscle, nerve and blood, so the nature of the assimilation of mental impressions varies according to the potential nature of the brain tissue, whose duty it is to transform impressions into ideas and modes of thought.

The inborn capacity or potentiality of brain tissue possessed by Newton, made it possible for him to so assimilate mental impressions, to take such a periscopic view of things, as to evolve from the depths of his mighty mind the laws by which atoms aggregate to suns and worlds are held in their orbits; his discoveries were not of chance, but of necessity, and the inherent qualities of his brain made his mode of thought an irresistible destiny.

The acts of each and every man, whether of humble or exalted mentality, are but so many scenes in the great drama of individual life, but panoramic views constantly revolving before us, moved by machinery behind the scenes; that machinery is the human brain, which in proportion to each individual capacity gives forth, in the human mind, the power to act.

The idiot possesses an inferior brain organization, and necessarily an exceedingly low order of intellect; indeed, were it not for his human form, he would not outrank many types of lower animal life.

Why the difference in two children who start in life under the same conditions of bodily and mental discipline? Evidently not because of early opportunities, for herein both were equal; but the difference

comes from the potential character of brain tissue, which in one gave great inborn capacity to assimilate impressions, while the other was unable, because of an inferior or weaker inborn capacity of brain structure, to receive more than the simpler impressions from his life's experience, and his mode of thought and action correspond with the statical energy of his organization.

Nations and peoples differ from each other in their ideas of law and civil government, religion and morals, and these differences have existed from the earliest monumental history of man, and as strongly mark the present diversity of races as do the color of skin or form of skull; these intellectual variations result from the different brain capacities of the several species, and thereby absolutely preclude an intellectual equality, except through amalgamation, by which the superiority of one is depressed, while the inferiority of the other is elevated, till a temporary equilibrium is produced.

So, too, with the individual elements which form each and every human variety; each possesses a brain organization of definite statical power, which is capable of receiving and assimilating a specific amount of impressions, from which is evolved energy of a specific quality. One person exhibits a character pre-eminently noble, unselfish and brave, shrinks from no labor, however arduous, nor fears danger when in the discharge of duty; the altruistic element predominates, and he becomes a benefactor of mankind. Another is egotistic, seeking only his own good, regardless of the claims of others, without charity or love, as vulgar in mind as he is cowardly at heart, to whom appetite is synonymous with duty, and obedience to law, through fear of penalty, seems to him an abridgment of human liberty. Between these examples there are as many distinct characters as there are individuals of the race, and who is there to proclaim equality to all? Intellectual and moral differences depending on organization are, therefore, known to exist, and I now come to inquire relative to the transmission of these differences from parent to offspring.

That "like begets like," is a truism of general belief, and rests for its acceptance on the facts, so long observed, that whether in lower animals or in man, the general and special traits of character belonging to a parent are developed in the offspring, and this repetition of similar forms and qualities is known as heredity; a biological law which involves both the morphology and physiology; the form and function, or the statics and dynamics of the organism.

Within the limits of specific characteristics the law of heredity is absolute, both as to form and function; and although slight variations ever exist which enable us to identify one individual from another, yet the boundary lines of species define with accuracy the physical and mental traits which belong to them; hence an animal that possesses a form or an instinct differing from that of its species, is a morphological and physiological monstrosity. A dog with hoofs or wings is no more a monster, than is a dog whose instinct impels him to perform the actions of a sheep or a bird.

There can be no doubt, therefore, but that the heredity of specific characters is a well-established fact, and the question is thus narrowed to the solution of individual peculiarities.

The heredity of individual form or external physical characters is so

well known and so universally acknowledged, that a few examples only will suffice to demonstrate the fact.

Your attention is simply called to the different breeds of cattle, of which the "short-horn" is a typical illustration, and it is at once apparent that the individual peculiarities are inherited.

Does not the horse furnish strong evidence of personal heredity—thereby giving us either the strong draft-horse or the fleet courser, each having his own family likeness? Does not the pedigree of the greyhound, of the shepherd dog or spaniel, determine the physical conformation, as well as the special qualities which give value to each individual? Assuredly, yes!

It is useless to enlarge the list, for it is acknowledged by all that the bodily likeness of the offsprings of the wild or domesticated animals is but a repetition of the form and features of the parent stock.

With man this same law obtains, and hence we see the child resembling either the father or mother, or some member of the ancestral line, not only in general form and feature, but in the minute details of the organization; such as color of hair and eyes, tint of skin, size of bones, obesity or spareness of body, shape and size of nose, ears, hands and feet, in movements, in voice—in short, in everything which goes to make up the general bodily contour or expression.

Even deviations from normal types are transmitted and retained so long as there is obedience to the laws of heredity; a noted example being Lambert, "the porcupine man," so called because of the horny excrescences which thickly covered his skin. This condition was transmitted through six generations. Polydactylism and ectrodactylism, albinism, rickets, as well as bodily mutilations, as the loss or injury of a member, are other examples of transmissible physical conditions.

These deviations from the normal type open a wide field of inquiry as to the possibility of establishing new species through the influences of inheritance; but my present purpose is only to speak of facts as we know them, and as they relate to the phenomena of animal life and action.

It has been shown that heredity is potent to determine the physical form of animal life; and the question now is, will it also determine the functions of the organism?

A few facts will show, first, the relative heredity of instinct, then of perception, and lastly of ideation, which will warrant the deduction to be made, that heredity influences function as well as form.

Birds hatched in a cage will, when liberated, build their nests of similar materials, in the same way, and of the same form, as do their parents; if migratory in habits, they will take their flight at the same time and direct their course to the same latitude, guided in all by an instinct which, without the aid of experience, is made perfect by inheritance. The young squirrel accumulates its store of nuts, thereby protecting itself against the contingencies of winter, of which it has no experience; the beaver builds his dam, and the duckling seeks the water, obedient to an innate impulse which is irresistible.

These are examples of primitive or natural instinct, which, to some degree, exists in every type of life, from the *monera primitiva* to the *genus homo;* and which may be defined as "an act conformed to an

end, but without consciousness of that end." It is an unconscious form of intelligence, whose special mode of action in the different varieties of animal forms is an exact correlative of the development of the nervous centres in these varieties.

This blind, impelling force—this unconscious intelligence—is transformed into a teachable intelligence when the evolution of nerve centres makes possible the existence of ideas, reason and will. Now it is that acts performed are modified whenever the surrounding conditions necessitate a change, and there is developed an acquired instinct, an addition to the primitive nature, which in like manner becomes an element of heredity.

Leroy states that where the fox is much hunted its young exhibit a more cautious and crafty nature than do old foxes in districts where there is but little warfare against them, and Cuvier explains this fact by the heredity of acquired instinct. Knight affirms that the habits of the English woodcock have undergone great change, and that its fear of man has greatly "increased by its transmission through several generations."

Darwin has discovered the fact, that in those places but little visited by man the animals are very tame, and acquire fear in proportion as they learn his methods of destroying them. He also gives as a fact that small birds are less wild and shy than large ones, and reasons that it is because the large ones are more persecuted by sportsmen; for in desert islands timidity does not differentiate the two.

If the animal is teachable, it requires several generations to fix the acquired character, during which time there is a silent conflict between the acquired and natural instinct—a struggle to maintain the present acquisition, and a struggle to revert to primitive habits. This is well observed in hatching the egg of a wild bird under one domesticated; for no sooner is the young one forth than it strives to obey its natural instinct and fly away, and it is only after the influence of domestication has been carefully guarded and conserved through several generations, that the acquired predominates over the primitive instinct.

(*To be continued.*)

———o———

Superb Ventilation.—This morning we happened to remark to one of our city physicians that the concert last night was very good, to which he replied warmly, "It was, indeed, most excellent, the best thing of the kind that ever happened in San Antonio."

"But how do you know all that; you were not there, were you?" we wanted to know.

"I know I wasn't there, but I happen to know that nearly everybody that was there is under treatment for rheumatism, neuralgia, pleurisy or influenza. I have about fifteen cases myself, and all respectable people who pay their bills. The performance was truly excellent."

It was very chilly in that hall last night. There is no mistake about that. The ventilation was superb.—*San Antonio Herald.*

EDUCATIONAL NOTES.

By RICHARD MCSHERRY, M.D., Prof. of Practice of Medicine, University of Maryland.

"And then the whining school-boy, with his satchel
And shining morning face, creeping like snail
Unwillingly to school."

It must have been ever so with the school-boy. One can scarcely imagine the "divine Williams" in his boy days, with surely radiant morning face, treading unwillingly in the footsteps of British urchins, his predecessors for an hundred years, to that free school at Stratford where he took his first scholastic lessons. But likely enough he spoke from memory as well as from maturer observation. Mayhap, like most other boys, with or without genius, he had the "rudiments" forced upon him *a tergo*, as Luther says he had when at the free school at Mansfeld. He acknowledges to fifteen chastisements in one morning! In those days the precept of Solomon, "beat his sides," was made practical, though the side usually attacked may not be mentionable to ears polite.

Boys almost inevitably hate schools and their discipline. Any one brought up in our Southern States may have often seen young master going to school, on his pony, mayhap, looking the picture of woe, while the negro slave-boys, of his own age, were going laughing, whistling and singing to their morning work. Such was the rule, not the exception. The happy days of childhood, so lauded in after years, do not represent the school-days, which are but too often days of present misery, as well as prominent factors, in after years, of suffering. Is the acquisition of learning, then, in youth, prejudicial to subsequent health and happiness? That depends upon the *manner* of the acquisition. In point of fact, it often is; as a matter of necessity, it never ought to be.

Perhaps the reader may, the writer certainly does, recall early days, yea, years, wasted and mismanaged in the school course. It is true no boy or girl of average capacity can pass childhood and youth in the schools without acquiring a considerable amount of elementary knowledge; and yet there may be, and furthermore there usually is, a fearful waste of time in this acquisition. And time is precious: *ars longa, vita brevis.* But, besides time, much money is lost. And, besides loss of time and money, health is often irretrievably impaired. Upon this last matter it becomes the physicians of the land to unite their voices in opposing a great evil. In many individual families it is observed that one or two of the children are suffering from the school course; they become obviously dyspeptic and languid, physically and mentally. They may struggle through, or they may fall by the way. What is known in the experience of one family is known

by the attending physician as occurring in many families, and what one physician sees in his circle of practice is seen by every other physician in his circle, so that the sum total is a perennial epidemic among school children.

Why is it so? The doctor knows well enough; and the layman may know equally well by looking over any, and especially the last volume of the instructive pages of THE SANITARIAN.

School-rooms are usually over-crowded and ill-ventilated. They are prisons of the worst sort. In winter, with doors and windows closed, besides the hot stove or the hot air from the furnace, there are so many breaths and so many exhalations from healthy and unhealthy children, that the whole air is actually poisoned. This is not a figure of speech, but a matter of fact. Some of the little prisoners, or sufferers—patients in a literal sense—are too close to the supply of heat, and some too remote from it; thus, in the same room, some may be suffering with heat and others with cold, and all with a greater or less degree of *ochlesis*, or crowd-poisoning. In warm weather, with doors and windows open, the draughts are ill-distributed, so that some may be chilled, while others are being suffocated with the heat. For hour after hour the children are expected to keep quiet, without other change of position than a little swaying of the person, or such pathological change as may gradually occur—as in, *e. g.*, spinal curvature.

Such are common and certainly not trifling trials of school children in the physical order. A lady mentioned to the writer, a few days ago, that her daughter was suffering with her eyes. The question was asked, How does she use them? The answer developed that she is in school from 8½ A. M. to 2½ P. M., with a short recess; after dinner she studies for several hours, and then takes a walk before tea; after tea she writes her exercises until 10 o'clock, when she goes to bed. She is working rather harder than usual, as she is getting up her examination. Besides suffering with her eyes, she eats almost nothing at meals, or at any other time.

This, being interpreted, means, that the young lady, to keep well with her classes and teachers, is merely ruining, *obviously*, her eyes and her stomach. She cannot stop; she must keep up. The doctor foresees the sequel: she, of course, does not; her family does not; society does not.

The doctor has taken occasion, from time to time, to look over series of questions propounded to the scholars at the examinations, and, to tell the truth, he has often been sorely puzzled by them. They are frequently very abstruse, and their thorough understanding would require very laborious intellectual effort, though a child with a good memory might answer them as a parrot would, and with about as much appreciation of their significance.

The worst of it is, that when many of these matters have been taken in by memory at great expenditure of brain force and attendant violation of hygienic laws, they are practically worthless. They will not make the possessors in any sense happier, better, wiser. Many of the questions would stagger the most intelligent ladies in any or every society; they would be too hard for members of Congress, ministers of the Gospel, judges of the Supreme Court, or even members of the

American Medical Association. For such learning, *Cui bono?* The answer would be difficult. *Cui malo?* The answer would be easy. The young mind, like the young body, may be exhausted by overwork. Athletes become stale young, and the overtaxed mind of the child is often followed by mental inertia. Thus both mental and physical forces are frequently impaired. Taxing the memory to surprise and delight examiners with ready answers to difficult questions is not so good for the learner in reality as in appearance. "I have seen all the works done under the sun, and behold all is vanity," says a great authority; and the text is often illustrated in the examinations.

It has been truly said that the mind, like the body, becomes dyspeptic from cramming. And, furthermore, impairment of the nervous system in one generation becomes a matter of entail. If entails be against American statute law, they are nevertheless in accordance with natural law. The prize-girl's children are perhaps very bright and precocious, but when sick they are fearfully liable to delirium and convulsions, and multiform nervous maladies. This is not a theoretic idea, but something that the writer has seen in practice.

The mind and the body, being in close sympathy, ought to be educated together. If we go back to ancient Athens in the days of her glory, we find that intellectual and æsthetic culture and gymnastic training were carried along *pari passu*, and in the common interests of mind and body, and for the development of physical as of mental strength, and of physical beauty.

The last point should by no means be ignored, especially in the female sex, which usually suffers most in the school career. Beauty requires intelligence of expression, sustained by vigor of health. Education must be so balanced as to favor the one as well as the other. A young woman should look to be capable of the fulfillment of all the duties likely to devolve upon her in life. She ought to be, as the Scripture has it, a "valiant woman," and a capable helpmeet. Her frame ought to be well expanded, and she ought to have the development necessary to beauty of contour before marriage, and to other purpose after matrimony. Dr. Allen tells us that the American woman, where most schooled, is steadily losing in those important requisites of feminine grace and function. Fifteen years of drudgery in the schools are very apt to impair the girl's rights and her interests in these matters, as well as the rights and interests of her future companion.

Every observant physician is aware of the wrong thus inflicted upon our young women, and through them upon society at large. A distinguished medical author says: "Unfortunately the restless, energetic and ambitious spirit which actuates the people of the United States, has prompted a plan of education which, by its severity, creates a vast disproportion between these two systems (nervous and muscular), and its effects are more especially exerted upon the female sex, in which the tendency to such loss of balance is much more marked than in the male. Girls of tender age are required to apply their minds too constantly, to master studies which are too difficult, and to tax their intellects by efforts of thought and memory which are too prolonged and laborious. The results are, rapid development of brain and nervous system, precocious talent, refined and cultivated taste,

and a fascinating vivacity on the one hand; a morbid impressibility, great feebleness of muscular system, and marked tendency to disease in the generative organs on the other." (Dr. Gaillard Thomas, on "Diseases of Women.")

That the facts are well and truly stated by Dr. Thomas every physician knows. They are but too well sustained by Dr. Allen, in his instructive article on "Vital Statistics," in the June number of THE SANITARIAN. Such articles convey *knowledge* to our people, and ought to promote *wisdom*, the two words not being synonymous.

It must not be supposed that the writer is opposing education, or the highest development of the mental faculties in male or female. He only opposes sacrificing the body to the mind, an error which is taking fearful proportions in our country. Every boy and girl in America ought to have a good English education—that which such men as Edward Everett and Prof. Huxley pronounce to be a good education. With so much foundation, native force will make its own way in special learning. Our Washingtons, Franklins, Fultons, had no other foundation in school learning. We have had no Mrs. Somervilles, but this wonderful lady was very much self-educated. Laplace said to her that she and another English lady were the only persons who appeared fully to understand his *mécanique céleste*. The other English lady, he said, was a former correspondent, Mrs. Greig. But there was only one. The lady, twice married, had opened her correspondence under the name of her first husband.

Between the ages of seven and fourteen years all sufficent elements of general education may be acquired. Lord Collingwood said that a boy intended for the career of a naval officer ought to enter as midshipman at thirteen years of age. That was for the beginning of his special education. At fourteen every youth might begin to prepare for his or her special career, the education being directed to the end in view.

Meantime, how many hours should be employed by children in brain-work every day? Say sixteen hours—as by a German professor? Why, no; but rather sixteen hours a week. The writer has already suggested in these pages that children should never be required to sit in a school-room over *one* hour at a time; when they should be sent out in the air for a recess, and the room vacated should be at the same time thoroughly aired. This would be a great advantage to the physical organization—would it be any detriment to the mental? Far from it. Our people like categorical facts, as it were, tabulated. Then let them look at facts. Mr. Chadwick, a most scientific observer, found that young children could not keep up voluntary attention to study beyond two hours in the morning and one in the afternoon. "By force, even, they cannot get more than one additional half hour of real attention, and that half hour proves in the end *a mental mischief, as well as a bodily injury.*" He found that *half-time* children learned as much habitually in the schools as *full-time* children; that is, that those who gave three hours to study learned fully as much as those who gave six hours—we will not say to study, but to school. The half-time children came from the factories. "*As they gain in bodily condition by the reduction of their physical labor, so do they in mental condition by the reduction of the time devoted to mental labor.*" (THE SANITARIAN, April, 1877.)

Now if children can learn as much in three hours of daily study as in six, and if confinement in the average school-room is injurious to their physical condition, upon what reasonable ground can this forcing process be sustained, which does not improve the mental faculties, but certainly injures the physical powers? Would it not be better that boys and girls should be radiant with health at fourteen or fifteen years of age, though only well instructed in the elements of English education, than that they should have the semblance of varied learning with constitutions already impaired? When the brain is unduly taxed with difficult lessons, nerve force is more or less diverted from all other uses, and consequently all other parts of the animal organism must suffer. And this is what we see all around us—the body sacrificed to the mind, and the mind not better for the sacrifice. Yet, by better and more judicious arrangements, both mind and body could be fortified in, and during the course of youthful study, by courses properly adapted to the needs and capacities of the rising generation. Let there be more of the Athenian method in training the young, and let æsthetic, intellectual and physical culture be fairly and equitably distributed: and then the sovereign people of a third of a century hereafter will have reason to thank the wisdom, rather than to blame the folly of their parents.

These thoughts have occupied the mind of the writer, as well as of thousands of thoughtful men, for many years. The admirable articles published in the pages of THE SANITARIAN from month to month, including the proceedings of the Medico-Legal Society, and many very able contributions from various sources, have stimulated the writer thus to offer for publication sentiments which he is sure are generally entertained by American physicians, as well as by all who give any attention to matters of sanitary reform. The facts should be presented and reiterated, until the public is made to understand that American children may be educated up to the fullest extent of their respective capacities, by such a change of method as will devolop without exhausting brain and nerve force, while at the same time the physical health and powers may not only be preserved, but invigorated. The improved method desired must be understood by all careful readers of THE SANITARIAN, and it is a matter of paramount importance, in which all the people of the United States have an abiding interest.

Baltimore, June, 1877.

Solubility of the Salts of Lead.—The carbonate of lead is soluble in 50,000 times its own weight of water. That is, one gallon of water could only contain 1-50,000 of a gallon of carbonate of lead. This means that it is practically insoluble. The sulphate of lead is soluble in 20,000 times its own weight of water. As far as chemists have been able to tell, the phosphate of lead is altogether insoluble. The nitrate of lead, on the other hand, is soluble in only three parts of water. That is to say, that a gallon of water has the capacity of dissolving one-third of its weight of nitrate of lead. Chloride of lead is soluble in 135 parts of water (a dangerous degree of solubility). The oxide of lead is dissolved by pure water at the rate of eight grains per gallon.

MAX JOSEF v. PETTENKOFER.

Preventive Medicine—that science which seeks rather to prevent than to cure disease—is of comparatively recent origin. Almost all the great men who have contributed most to its advancement are still living. In England, Chadwick, Farr, Simon; in Germany, Pettenkofer and Virchow, are best known. These men, and many others with them hardly less renowned, are laboring for the advancement of science and the welfare of humanity. They strive, without hope of pecuniary reward, to protect the lives of the people, and to guard the homes of the poor, especially, from disease and suffering. By saving to the community the labor and industry of the artisan and the mechanic, they contribute to the public wealth; and by saving the lives of the children, they contribute to the future development of the resources of the country.

MAX JOSEF v. PETTENKOFER has, for nearly thirty-five years, labored in the ranks of the profession, with a singleness of purpose and a degree of success rarely equaled. Indeed, his whole life, from early childhood, seems to have been devoted to his favorite study. His success has never been the result of accident; he has gained every step by industry and perseverance; and although his earlier efforts were not free from disappointments, his indomitable will has been sufficient to overcome them all, and now, a Privy Counselor of the kingdom of Bavaria, he has reached an eminence attained by few of his professional brethren in any country. He was born in Bavaria, on the 3d of December, 1818, at Lichtenheim, a small town near Neuburg, on the river Donau. At the early age of nine years he went to Munich, and there, under the direction of his uncle, Dr. Franz Xavier v. Pettenkofer, a chemist of distinction, he pursued his studies. Thus from his childhood was developed a taste for minute analysis and careful inquiry into the laws which govern the phenomena of nature, and there was laid the groundwork of that education which was to enable him to successfully carry out the great work of his life.

He finished his course at the Gymnasium with distinction, and then entered the University of Munich, where he completed his studies in philosophy, natural sciences, pharmacy and medicine; and in 1843, at the age of twenty-five years, he received the degree of Doctor of Medicine and Surgery. The preference for the study of chemistry which characterized his university course now became more marked; but he directed his attention more particularly to chemistry in its medical relations. He went from Munich to Würzburg to attend the clinic of Marcus, but while there he spent the greater part of his time in the laboratory of Scherer.

One of the earliest results of his industry was the discovery of that principle named after him "*Pettenkofer's Gallenreaction.*" The discov-

ery of this principle has been, and is still, of the greatest importance to the chemist, the physiologist and the physician. His discovery of a new infectious element in the normal urine was equally important. He gave a clear demonstration of this substance, and made an elementary analysis, which proved it to be a combination of creatin and creatinin. This discovery took the scientific world by surprise, and yet Liebig, when he published his work on the "*Constitution of the Urine,*" in 1843, failed to notice it. In 1844 he went to Giesen, and while there spent nearly all his time in the laboratory of Liebig. Towards the end of the same year he returned to Munich, with the hope of inducing the faculty of the university of that city to establish a chair similar to the one filled by Scherer in Würzburg. This application was not successful, and the young scientist was obliged to postpone indefinitely his hope of obtaining a professorship. An accident obtained for him a position in the Assay Department of the Royal Mint. Here Pettenkofer's inquiring disposition soon showed itself to advantage. He introduced an improvement in the method of assaying gold and silver. He found that the Brabant, or crown thaler, always contained a large proportion of platinum, and that this mixture, heretofore unsuspected, was the chief cause of many inexplicable difficulties with which the refiner had to contend.

Pettenkofer now succeeded in gaining the chief object of his ambition. Previously defeated through the opposing views and conflicting interests of individuals, these difficulties were now unexpectedly removed. In 1847 a professorship of Medical Chemistry was created in the University of Munich, and Pettenkofer had the satisfaction and the honor of being called to fill it. He accepted the invitation, and November 27th, 1847, was appointed professor. Enthusiastic in the duties of his new calling, full of zeal for the progress of the subject he undertook to teach, and desiring to extend and popularize a knowledge of hygiene, he labored incessantly. Still his love for original investigation was so strong, that he could not entirely abandon his studies in technical chemistry, and to his investigations in this direction we are indebted for the discovery of a new process for restoring old paintings. This process was introduced with the greatest success in the royal gallery of Bavaria. The discovery of the illuminating properties of gas from wood dates from the year 1849, and was rewarded with the highest testimonials by the Industrial Exposition of 1854, on account of the excellent qualities of the gas, and of the number and importance of the applications of which it is susceptible. These discoveries gained for him an honorable position among scientific men, and it was for the purpose of measuring this gas that he invented the gasometer. This was followed by another invention hardly less important, his apparatus for measuring the respiratory power of the lungs. This instrument was first used in the laboratory as a gasometer.

In 1851 he published his first essay on hygiene: On the difference between furnace-heating and air-heating, in their influence on the atmosphere of the space heated.*

---

*"*Ueber den Unterschied Zwischen Ofenheizung und Luftheizung, in ihrer Einwirkung auf die Atmosphäre der beheizten Räume.*"*

Two events occurred subsequently which contributed much to give a special direction to his scientific inquiries. By the appointment of Liebig as professor in the university, in 1852, he was relieved from the duty of lecturing on general chemistry, and was thus enabled to give his undivided attention to medical chemistry and hygiene; and, on the appearance of cholera in Bavaria, he had an opportunity to study the ætiology of the disease. These two subjects have formed the themes on which he has ever since dilated, for even his works on ground water and ground ventilation were prepared with special reference to the influence of these conditions on cholera and typhus. His work on the spread of cholera, "*Verbreitung der Cholera*," 1855, and the complete report on the cholera epidemic in Bavaria, 1857, "*Hauptbericht über die Choleraepidemic in Baïern*," contain the results of his researches into the nature of this disease, and gained for him an enduring fame as a benefactor of mankind and a scientific investigator. He has contributed much to our knowledge of the ætiology of this epidemic, and fully developed his views on the subject, in many articles besides those already cited. In studying the spread of the disease, he always kept three points prominent: *germ*, *locality* and *individual predisposition*.

In the year 1868 Pettenkofer visited Lyons, Marseilles, Gibraltar and Malta, in order to obtain such information as these localities might afford, to strengthen the position he had already taken on the subject. In 1874 he was sent to the Vienna Exposition as a delegate from the German Empire, and, in an exhaustive report to the International Sanitary Conference, he developed the results of his recent studies; he made a further contribution to this subject in his Cholera in its Place of Origin, "*Die Choleraepidemic in der Gefangenanstalt Laufen*."

This work, with eight illustrations, has been translated and published in France and England.

Besides his investigations into the subject of cholera, he has contributed much towards establishing some of the departments of Public Health Administration on a more solid basis, furnished by advances made in the natural sciences. To his persevering investigations in this direction we are indebted for many excellent scientific works. On a new method of determining the quantity of carbonic acid in the air.* On the changes that take place in the air within buildings, and the principles of artificial ventilation.† On air in schools.‡ On the choice of sites for burial places,‖ etc., etc.

The discovery of the method of accurately determining the quantity of carbonic acid present, led to the solution of a problem in ventilation which could not have been effected without it. He showed that atmospheric changes could be determined in a confined space in which neither the senses nor the anemometer could detect any variation. This he did with almost mathematical precision, by the artificial de-

*"*Ueber eine neue Methode, die Kohlensäure der Luft quantitativ zu bestimmen.*"

†"*Ueber den natürlichen Luftwechsel in den Gebäuden, und über die Grundsätze der künstlichen Ventilation.*"

‡"*Ueber die Luft in den Schulen.*"

‖"*Ueber die Wahl der Begrabnissplatze.*"

velopment of carbonic acid, and then measuring the quantity of fresh air introduced to restore the equilibrium. This process led him to observe the great porosity of walls of all kinds of mason-work, and of the different kinds of building materials, and the facility with which they admit the passage through them of air, moisture, and all kinds of gases. He showed that the porosity of the ground, enabling it to hold or to transmit, according to circumstances, all the most poisonous elements arising from animal and vegetable putrefaction and decomposition, renders its preservation from contamination one of the most difficult, as it is one of the most important questions with which the sanitarian has to deal.*

Pettenkofer did not limit his investigations to the discovery of new principles in science, but has made it one of the chief purposes of his life to disseminate a knowledge of these principles, and to cause the medical profession to recognize hygiene as a distinct department of medical education, and to found special chairs for the teaching of this branch. His views on this subject are given in his work on the "Means of perfecting the theory and practice of Public Health Administration,† and on Hygiene and its Place in High Schools.‡

In 1847 he was appointed Professor Extraordinary of Medical Chemistry in the Faculty of Medicine, and in 1853 he was promoted to the rank of Professor.

In 1856 he succeeded in effecting many changes in the details of his department. Somewhat later he induced the faculty to separate from his chair the so-called "*Staatsarzneikunde*," a formal union of judicial medicine and of medical police; and he was thus enabled to devote himself exclusively to the subject of hygiene. This he caused to be so far recognized, as to induce the faculty, by a unanimous vote, to make it a distinct subject of examination. In 1872 he was offered a professorship in Vienna, which he declined, in compliance with the general wish of the people of Munich, his professional brethren, and the king himself, who has ever shown a great respect for Pettenkofer.

While exerting all his influence and taxing all his resources to elevate his favorite study to the dignity of an independent science, his inventive powers have brought many things to light which have had an incalculable influence on the successful application of his scientific discoveries. To this class belongs the invention and construction of his celebrated respiratory apparatus, "*Respirations Apparates*," in which men and large animals have been able to live for a long time without any artificial support, and the quantity of the gases and fluids given off from their bodies during their confinement have been accurately determined.

In a former number of THE SANITARIAN we noticed the invitation given him to accept the Directorship of the Royal Sanitary Department, organized in Berlin. This honor he declined, and King Ludwig sent him, in consequence, an autograph letter, thanking him for remaining in Munich, and conferring on him the rank and official position of Privy Counselor.

---

* "*Baden und Grundwasser in ihren Beziehungen zu Cholera und Typhus.*" München, 1869.

† "*Mittel zur Förderung der Theorie und Praxis der öffentlichen Gesundheitspflege.*"

‡ "*Ueber Hygiene und ihre Stellung an den Hochschulen.*"

Pettenkofer has been a most prolific writer. He has already published more than two hundred works and essays on various subjects connected, more or less directly, with the subject of hygiene.

We have already placed before our readers his "two popular lectures on the Value of Health to a City."

Besides these, he has delivered many popular lectures in Munich and other German cities. In November, 1875, he delivered three popular lectures on Sewerage and Scavenage, to highly appreciative audiences, in Munich. Among the ablest of his purely literary works, is his admirable eulogy on his friend and associate, Dr. Justus Freiherrn v. Liebig, delivered before the Royal Bavarian Academy of Sciences, at their public session held in Munich on the 28th of March, 1874. His last essay is entitled: "Nine Ætiological and Prophylactic Points, from the official reports on the Cholera Epidemic in the East Indies and in the United States of North America,"* which appeared in the "*Deutschen Vierteljahrsschriften für öffentliche Gesundheitspflege.*" Band IX., Heft. 2. In this article he has very freely and very ably criticised the works under review. T. P. C.

A Female Chemist.—We often read of women who unsex themselves in appearance in order to engage in some masculine employment, such as that of a sailor or soldier, or even a farm hand. But a Russian journal tells the following incident, which is still more curious than any of these:

A young Russian has for some years been prosecuting his chemical studies at the University of Leipsic with unusual zeal. The young man, of an aristocratic exterior, made friends of all who came in contact with him. Recently he passed a most brilliant examination, which was rewarded with the dignity of a Master of Arts.

Soon thereafter a young lady called on one of the most prominent professors of the University, addressing the celebrated savant in the following words:

"I desire, professor, before I depart from Leipsic, to express to you my most hearty thanks."

The professor, perfectly astonished, observed:—

"Thanks—but for what?"

"Listen, sir. I was married to the old Prince ——. My husband died some years ago. He died insolvent, so that I was left even without the daily bread. I resolved to seek the necessary means of subsistence in science."

The professor then interrupted her, saying:

"Yes, most gracious lady; nevertheless, I cannot see why you should address any thanks to me."

The lady continued:

"Observe, then: it is now more than three years that here in Leipsic I have been a student. The student who lately passed the examination, and whom you considered worthy of distinction, is none other than myself."

---

* *Neun ätiologische und prophylaktische Sätze aus den amtlichen Berichten über die choleraepidemien in ostindien und in den Vereinigten Staaten von Nordamerika, von Dr. Med. Max von Pettenkofer.* 1877.

Editor's Table.

Brooklyn and her Suburbs.—Two events have recently taken place which have awakened great interest in the people of Brooklyn, and caused her citizens to look around themselves and see what kind of a country they have at their doors. The first of these events was, on June 28th, the laying of the corner-stone of the Cathedral of the Incarnation of the Diocese of Long Island, at Garden City, the grandest memorial of modern times, in process of erection by the venerable Christian lady, Mrs. A. T. Stewart, in memory of her deceased husband. A gift, and a work which far transcends any other gift for religious and educational purposes hitherto known in this country. We are gratified at having been the first to foreshadow this event, in our May and June numbers: "A CITY OF HEALTH—GARDEN CITY," signed Long Island; and "MORE ABOUT GARDEN CITY," signed E. L., followed by an extract from the *Hempstead Inquirer*, headed "THE STEWART MEMORIAL CHURCH." These communications, so fittingly describing the situation and attractions of Garden City, justly stand at the head of all the subsequent encomiums on that place, as being in every way eminently suitable for the FOUNDATION which will henceforth render Garden City a place of world-wide repute; and, if it is not indeed, a bright and shining light to future generations, it will be by reason of criminal negligence on the part of those who may hereafter succeed to its guidance. Founded in such munificence and under such blessed auspices, its heritage is a truly glorious one. "But," in the glowing words of Bishop Littlejohn's address at the laying of the corner-stone, "Whatever this foundation may be to us, as its stewards and trustees, whatever the life to gather around it, the institution to be built upon it, whatever its architectural wealth, whatever the beneficence of the work to grow out of it, we cannot forget that it will stand here as a memorial of the dead. It will tell to coming time the record of an honest, industrious and sagacious life, a life without a stain, modest and temperate, just and true, brave and firm of purpose, simple in habits, genial in home life, quiet and humble everywhere, and all this in the midst of transcendent success and colossal riches. But more than this, it will tell of a life that closed its mortal career in the comfort of a reasonable, religious and holy hope. Here that life, as the years roll on, shall

> "Smell sweet
> And blossom in the dust."

"What nobler memorial than this could the living erect to the dead? In what other form could the sublimest and purest forces—working for the elevation of man, learning, philanthropy, Christian mercy, the religion of the Cross—meet and mingle and organize to take hold on the living present and the distant future? All this, then, is an offering, and may the Lamb of God accept it as his own. All this, too, is a memorial, and may all men revere the motive which prompted it, and imitate the pious beneficence which shall carry it on in all its parts to completion."

The other event to which we refer was only two days later, June

30th, the re-opening of steam communication with the surrounding country. The L. I. R. R. Company signalized this occasion by great rejoicing, and a complimentary excursion of the city officials and a few invited guests besides, to Greenport and Shelter Island, with a clam-bake feast, Indian fashion, as a chief attraction. The day was a delightful one, the party in the best of humor, and the feast the best of its kind. It was prepared and served by a Rhode Island veteran, whose forefathers, from time immemorial, have followed the avocation of clam-baking, until, upon this veteran especially are found the most unmistakeable impressions of heredity—so strong that every clam, lobster, fish, chicken, potato, bunch of asparagus, in short, everything which entered into the composition of this particular clam-bake, including the great kettle of sauce—served in pitchers—just as the Indians always served it; and, on a table under a tent, set on the great Camp Ground, just as the Indians always set theirs; and an abundance of drinkables, such as the Indians always drank, good water; all—all came out just right, and the party all returned home just right. Not one of them feeling any the worse for the feast, but with clear heads and sound judgment justly appreciated the importance of this event—the opening of steam communication with the surrounding country—as a foreshadowing of the magnificence of Brooklyn's future.

Long Island, with its congenial climate, and over three hundred miles of water-line, sea and sound, indented all round with commodious bays and harbors abounding in fish of the best quality, and studded with most picturesque and beautiful islands, everywhere presents almost unequaled inducements for summer residence and resort for bathing, boating, fishing and hunting—indeed, few or no such delightful combinations of land and water are elsewhere to be found in this country, with so many desirable attractions for both summer and winter, adapted to the relief of weary and worn denizens of tumultuous and restless city life. These shores of Long Island are now placed within easy and rapid access of both Brooklyn and New York, by means of the Long Island and Hunters' Point railroads and ferries. And all the more are these privileges to be rejoiced over by the people of Brooklyn, because, having once before possessed them, they were guilty of the unaccountable folly of suppressing them; and now, after having been made to see and to feel the mistake which they made, they are glad to return to them with more than a first love, as *the* means, above all others, of consolidating and unifying the interests of nearly three-quarters of a million of people. And they are not forgetful of their sea-coast benefits to the poor and the helpless. The Sea-side Home for poor children and their mothers, on Coney Island beach, well attests the benevolence of the good people of Brooklyn. As a life-saving institution, it is the best in the land. No wonder that Coney Island, with such an institution, and with such an unequaled beach for surf-bathing, is so rapidly growing into public favor. The influence of such institutions is by no means limited to the immediate objects of their care, but pervading, and affect for good all who come within their shadows.

The Medical Society of the State of N. Y. held its 71st annual session in Albany, June 19th, 20th and 21st. The President, Dr.

E. R. SQUIBB, in his opening address, congratulated the Society on its prosperity, and suggested for its still further advancement that the presiding officers be selected with the more single purpose of getting a good active servant of the Society, who would carry out its work with impersonal energy; that the presiding officer should carry out and be responsible for the work of the Society at the meeting over which he presides; that the address which usually occupies the Wednesday evening session be discontinued, or at least the penalty of $25 for failure to deliver it be abolished; that the Secretary's annual salary be increased to $500, or that the editorship of the Transactions be separated from the duties of the Secretary, and given to an editor; that each volume of the Transactions hereafter should have a copious index; that a list of delegates by counties, with the time of election and expiration of service, should precede the list of permanent members, and be kept up with official accuracy, so that the true character and construction of this body as a society of delegates should be more prominent; and that the Treasurer should receive compensation for the time and labor required of him by the Society.

The work of the Society was then proceeded with according to the programme, previously arranged and circulated by the President—leaving the business committee appointed as usual—with nothing to do but to answer its call. The number of papers read was unusually large, but, on the whole, they appeared to be less interesting to the Society than the papers selected by the business committee, and discussed, as had hitherto been the practice. The plan adopted by the President, and advised for the future, of *securing* the *titles* of papers beforehand, and publishing them as the schedule of work, has the advantage of securing a larger number of papers, perhaps, to come before the Society; but that it is as likely to secure the *best* papers to occupy its attention as the plan previously pursued is very questionable. An improvement on both would be to appoint a business committee at the end of the session for the ensuing year, to whom all *papers* should be sent, say, thirty days before the time of meeting, in order that the committee may have time to examine them, and select and publish the titles of such only as, in the judgment of the committee, would be most profitable for public reading and discussion before the Society; leaving other papers to be referred, on motion of the business committee, at the discretion of the Society.

Two important changes were made: first, a change of the time of meeting—instead of June, to be hereafter convened on the third Tuesday in January; second, instead of the President appointing the Nominating Committee, as hitherto, after the adjournment of the session of first day's proceedings, the permanent members and delegates present from each of the eight judicial districts of the State shall elect one of their own number, and from their own district, as member of the Nominating Committee, and the eight persons thus elected shall constitute the Nominating Committee.

Officers elected for the ensuing year: President, Dr. J. Foster Jenkins; Vice President, Dr. A. L. Saunders; Secretary, Dr. W. Manlius Smith; Treasurer, Dr. C. H. Porter.

An Abstract of the Report of the Committee on Hygiene will be published in our next number.

Mortality per 1,000 inhabitants, annually, from all causes and certain special causes.

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,076,925—4 wks. end'g June 23.	721	1706	20.68	131	4	55	87	23	21	19	17		61	138	286	182
Philadelphia, 850,000—5 wks. end'g June 30.	622	1523	18.63	64	16	34	40	12	12	6	48	1	7	146	216	111
Brooklyn, 528,000—5 wks. end'g June 30...	494	1000	19.69	34	1	70	90	1	17	27	6		10	113	127	104
St. Louis, 500,000—5 wks. end'g June 30...	193	452	9.4	34		5	3		2	9	8	2	5	36	56	34
Chicago, 420,000—5 wks. end'g June 30....	321	660	16.34	25	2	15	98	8	6	5	8		5	36	83	48
Baltimore, 350,000—5 wks. end'g June 30...	601	937	27.84	17		27	47	7	7	56	8	1	4	218	95	42
Boston, 363,000—5 wks. end'g June 30.....	189	572	14.94	30		33	6		5	7	11		6	24	105	36
Cincinnati, 265,000—5 weeks end'g June 30	202	439	17.22	21	8	2	1	1	1	14	8		7	56	73	50
San Francisco, 300,000—month of May.....	148	444	17.76	15	6	62			8	4	15		5	8	58	34
New Orleans, 210,000.....																
Washington, 160,000—month of May.....	96	287	21.52	9		1	18	2		7	6		8	5	61	31
Pittsburgh, 145,000.....																
Newark, 126,000.....																
Providence, 103,000—month of June.....	36	123	14.33	7		21	1		1	1	1			2	21	7
Milwaukee, 101,000—month of June	79	159	15.57	3	29	5	10				1		1	3	20	2
Rochester, 70,000—month of April.....	19	90	15.42	4		1								8	29	9
Richmond, 72,500—5 wks. end'g June 30 ..	102	182	26.09	3			2	6	1	2	2		1	40	18	4
New Haven, 60,000—month of June.... ...	36	90	18.	8		4	5		1	1			1	12	7	5
Charleston, 57,000—4 wks. end'g June 30...	77	136	11.71													
Toledo, 50,000—2 months end'g May 31....	17	45	10.80	3		2	1	1	1	1	1		2			6
Mobile, 40,000—month of May.....	31	80	24.	4	1					1	2		2	9	6	5
Dayton, 36,000—month of June.....	7	25	8.33	2		1									6	2
Nashville, 27,000—month of June.....	48	84	37.56			5		1	1	3			1	15	11	2
Wheeling, 28,000—month of June.....	13	33	14.09	1	1		4				2			4	6	1
Buffalo, 170,000.....																
Knoxville, 13,000—month of June.....	7	25	23.07	1										1	9	2
Paterson, 40,000—month of May.....	28	76	22.8	1		7	3		1	2	3		3		10	12
Petersburg, 20,000.....																
Selma, 8,000—month of June.....	9	9	13.5	1										3	2	
Elmira, 20,100.....																
Yonkers, 18,000—month of June.....	8	24	16.				1								6	2
Memphis, 45,000—month of May.....	26	84	22.4	1			1				4			1	16	4
Detroit, 115,000—month of May.....		161	14.	5												
Syracuse, 60,000.....																
Erie, 26,057—month of May.....		23	10.39				2				2				6	
Bowling Green, 6,000—yr. end'g June 15 ..	17	42		2		1					1				2	3

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during two weeks ending May 19th, 11,267 births and 7,941 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 3,326. The mortality from all causes was, per 1,000—in London, 23.50; Edinburgh, 25.50; Glasgow, 31; Dublin, 28.50; Portsmouth, 18; Norwich, 23; Wolverhampton, 22; Sunderland, 23; Sheffield, 26; Birmingham, 26; Bristol, 26; Liverpool, 29; Salford, 37; Oldham, 34; Bradford, 23.50; Leeds, 23.50; Hull, 21; Newcastle-upon-Tyne, 25; Leicester, 25; Manchester, 33.50; Nottingham, 26. Other foreign cities at most recent dates, per 1,000 — Paris, 27; Rome, 23; Vienna, 31; Brussels, 26; Berlin, 27; Hamburg, 27; Calcutta, 30; Bombay, 70; Madras, 145; Amsterdam, 30; Rotterdam, 34; The Hague, 21; Christiana, 16; Breslau, 30; Buda-Pesth, 44; Turin, 26; Alexandria, 49; Copenhagen, 32; Munich, 40; Naples, 30.

Havana.—At the meeting of the "*Royal Academy of Medicine*," held on the 14th of January last, Dr. del Valle read a report on the Climatology and Mortality of the City of Havana for the year 1876. We take the following particulars from our excellent contemporary, the "*Cronica Medico-Quirurgica de la Habana*."

The city has a population of about 250,000, which we suppose is exclusive of the garrison. The deaths for 1876 were 9,122—an excess of 732 over 1875, being 36.48 per 1,000 inhabitants. There were 1,619 deaths from yellow fever in 1876, against 1,001 in 1875, being an increase of 618; and 1,714 deaths from consumption, against 1,466 in 1875, an increase of 248, being 18.79 per cent. of the total mortality. The cases of small-pox in 1876 were 160, in 1875, 717, a decrease of 557.

There was a remarkable increase in the number of deaths from fever, chiefly those of miasmatic origin. Since 1872 there have been 26 deaths from glanders, of which 11 occurred in 1876.

Dr. Valle thinks that the great increase in the number of deaths was chiefly due to unfavorable atmospheric conditions during the latter part of the year, and this opinion is shared by the "*Cronica*." The weather was rainy, generally damp, great heat, excess of electricity, an absence of the usual cool breezes, and an unusual number of cloudy days. Dr. Valle has indicated a very fruitful cause of mortality, by showing that it was greatest during the periods in which the water of the Almendares was unusually turbid, and he urges the necessity of giving better water, as one of the most important sanitary measures for the city.

The heat is sometimes excessive, but is modified by the cool sea breeze in the evening and during the night; the fluctuations in the humidity of the atmosphere are much more significant in relation to diseases of the respiratory organs. Gastro-intestinal diseases are not excessive, considering the great heat. Diphtheria has been very moderate. While cholera infantum is very rare, meningitis and tetanus infantilis are much more severe.

Yellow fever has been steadily increasing since 1873—excepting only 1875—and as it has been unusually severe during the hot weather below the equator, it will probably come north to a greater or less distance during the hot weather to recur.

Many practical inquiries are suggested by an examination of this report. For example: Why do consumptives leave New York and go to Havana, where there are more deaths from *that* disease, as compared with others, and where the ratio of deaths is larger than at home? Is the increase of temperature the only advantage they seek? Is that a *real* advantage? What is the significance of soil-saturation and a hot, moist atmosphere, in this disease? T. P. C.

Charleston.—City Registrar, Robert Lebby, M.D., in his Annual Report for 1876, felicitates himself, Dr. F. M. Robertson of the Committee on Epidemics, and the public, on their narrow escape from yellow fever for the year, notwithstanding they were surrounded by it on every side. Yet there were thirty deaths from it, twenty-seven in the city of Charleston proper, two from Savannah, and one from Sullivan's Island. "It originated . . on the Cooper River Shore Line . . along the mud flats to what is known as Johnson's Row, . . and lands known as Hunter's, . . filled with the offal of the scavengers' carts for two or three years, until May, 1876, although often protested against by the Board of Health." The citizens of all classes were alive to the danger and lent a willing hand to the health authorities: "during the five months 140,000 pounds of chloride of lime, 40,000 pounds of copperas and 70,000 gallons of carbolate of iron solution, were consumed by citizens in drains, streets and low places in the city."

The mortality for the year was 2,012:

668 whites, 1,344 colored, 1 unknown—an excess of 148 over the previous year. 896, or nearly 44½ per cent., of the deaths were of children under five years of age, and nearly two-thirds colored. Still-births, 147.

The chief causes of death were: consumption, 249; diphtheria, 125; trismus nascentium, 91; convulsions, 66; old age, 65 (the whole number of deaths recorded above 70 was but 57); typhoid fever, 57; cholera infantum, 54; pneumonia, 40; yellow fever, 30. Of the population, the colored are a little less than one-eighth in excess of the whites. The ratio of deaths among the colored, in the aggregate, is nearly twice as great as that of the whites. Of the still-births, the ratio among the colored is four times as great as among the whites; from consumption, more than three times as many; typhoid fever, cholera infantum and convulsions, more than twice as many; from apoplexy and congestion of the brain, less than half as many; of the thirty deaths from yellow fever, only one was colored, and of five deaths from scarlet fever, all were white. The total ratio per 1,000 for the year was 28.33.

Worse than the Fever.—An old colored woman who returned to Savannah recently, after a lengthy absence, encountered an old friend, whom, in a surprised tone, she greeted: "Why, laws, honey, is you here yet? ain't done gone for and died?" "No, ma'am," said the saluted one, "I'se here fur sure, but I'se had an orful time." "Did yer hab de yellum fever?" "No, wuss dan dat." "What dat? Wuss don de yellum fever? What did you hab?" "Why, I hab de carbolics," said the other, with a lugubrious look and a sniff of the nose. She had been disinfected out of her house.

Pittsburgh.—Annual Report, 1876. This city has a Board of Health consisting of nineteen members, twelve of whom are M.D.'s, and a well-equipped executive department: notwithstanding, "In my report for the year 1875," the Health Officer remarks, "I mentioned the fact that small-pox was then prevailing, to a limited degree, in certain portions of the city, and also referred to the measures which were then taken to prevent its further spread. During the month of December of that year, forty-six cases were reported at the office.

"During the past year it continued to prevail to a considerable extent, its progress being shown by the following statement, giving the number of cases reported during each month of the year: January, nineteen; February, fifty-one; March, fifty-three; April, forty-two; May, forty-six; June, fifty-nine; July, twenty-three; August, eight; September, twenty-one; October, nine; November, twenty-seven, and December sixty-three, making a total of four hundred and twenty-one cases, of which number eighty-six proved fatal.

"The plan adopted by the Board providing for the gratuitous vaccination of the poor, did not prove to be a very decided success on account of the circumlocution with which it was attended, many of those desiring to avail themselves of its provisions declining to do so for that reason."—A by no means flattering commentary on the efficiency of a Board of such large proportions. After the Health Officer's report follow three brief reports from as many Sanitary Inspectors, summarizing the increase of small-pox, the crowded condition and filthiness of tenement houses, and the refusal of the inmates to be vaccinated; the vile condition of slaughter-houses, stock-yards and oil refineries, and the accumulation of house and street garbage in streets and lots, in the neighborhood of which small-pox and other contagious diseases are perennial.

A large show is made by tabulated statements of nuisances abated, small-pox cases visited, and other details which have occupied the attention of the Board throughout the year, followed by the reports of the Registrar, Meat Inspector and Attorney, and an Appendix by the Secretary on *Vaccination vs. Small-Pox*, an excellent summary of the advantages

of vaccination, evidently as necessary to the people of Pittsburgh now, as the same truths were to people generally eighty years ago. The Secretary deserves well of his constituency, for the forcible manner in which he has put those truths; and the Board of Health should see to it that this chapter of their report, at least, have the widest possible distribution among their fellow-citizens, and that it be followed up by the energetic, practical work which it suggests.

Of the Registration Statistics, there is a somewhat remarkable coincidence in the reduction of numbers in all three of its divisions:

"During the past three years the mean rate of mortality of the city has been steadily diminished. The death-rate, which for 1873 was 26.46, was reduced in 1874 to 24.68, in 1875 to 21.12, and in 1876 to 20.39 per 1,000 inhabitants.

"A corresponding reduction has also occurred in the birth-rate. For 1873 the mean rate was 38.91; for 1874, 37.11; for 1875, 35.21, and for 1876, 30.03 per 1,000 inhabitants.

"A reduction has also occurred in the marriage-rate. For 1873 the mean rate was 26.80; for 1874 it was 22.38; for 1875 it was 17.03, and for 1876, 15.75 per 1,000 inhabitants."

It should be stated in this connection that these results are based upon an estimated population for the year of 142,000 (now estimated at 145,000), which looks large, seeing that by the census of 1870 the population was only 86,076.

The only increase for the year seems to have been in the number of still-births, the total number being 239—an increase of 35 over the previous year. This is accounted for by an improved form of certificate, by which more complete returns were secured.

Of the total number of deaths, 2,896, more than half (1,466) were under five years of age, and more than one-fourth (785) under one year. Except small-pox, there was a decrease in the number of deaths from all other zymotic diseases, which, however, in the aggregate caused 594 deaths, or 20.51 per cent. of the total mortality. Consumption killed 341, 11.77 per cent. of the total.

Toledo.—Annual Report of Board of Health for 1876, comprehends the usual clerical work, number and character of nuisances, summary of expenses, two brief reports by Sanitary Inspectors, monthly and consolidated mortality reports, and brief statements on the necessity of abattoirs and adequate sewerage.

Mortality for the year, exclusive of still-births (44), 696, an increase of 31 over the previous year. 182, or more than one in four, were from zymotic diseases.

Chief causes: consumption, 65; pneumonia, 48; cholera infantum, 41; premature birth, 37; convulsions, 35; diarrhœa, 27; measles, 21; congestion of bowels, 15; scarlet fever, 13; accidents, 13; typhoid fever, 12. "Estimating the population at 50,000," ratio of mortality per 1,000, 13.92, or, including the still-births, 14.80, which the Health Officer remarks, "as compared with other cities of the Union takes the foremost rank;" and he adds in another place, if "estimating the population at 55,000, it is 13.45."—Precisely so, and so on, as is the too common practice of overestimating the population: that of Toledo, in 1870, was 31,584. The ratio of mortality from preventable diseases is a far better measure of effective sanitary administration than the proportion of deaths to estimated population, and by this standard the health of Toledo for 1876 was certainly not above par; 182 deaths from zymotic diseases, out of a total mortality of 696, is a large ratio. Returns of births and marriages are confessedly incomplete.

Lowell.—Annual Report of City Clerk of births, marriages and deaths, 1876: 1,260; 514; 1,147.—Per 1,000: births, 24.70; marriages, 10.08; deaths, 22.49. Population, 51,000. 522 deaths, or over 45 per cent. of the total mortal-

ity, were of children under five years of age. The causes of death are not given.

Brooklyn has again shifted heads in her Health Department. Dr. JAMES CRANE has been appointed President of the Board of Health, in the place of Dr. ANDREW OTTERSON, whose term had expired. The change ought to be for the better, for, notwithstanding the progress made by Dr. Otterson, there are still many obstacles unsurmounted. Dr. Crane ought to be prepared for these, for he has the benefit of having been one of the most active and efficient members of the first, and, withal, the most effective health organizations worthy of the name either Brooklyn or New York has ever had—the Metropolitan Health Board of 1866-'70—however objectionable it may have been in its political features. We are glad to learn that a co-operative movement on the part of Brooklyn, New York and Hunter's Point authorities is already under way, for the abatement of factory and other nuisances on the Long Island shore line opposite New York, which have long been a disgrace to all in authority over them. Dr. Crane also gives promise of full returns of mortality, including over 500 deaths per annum of Brooklyn's population who die at the County Institutions, which have hitherto been omitted from the published statistics.

Toxicology—Salts of Copper.—At a meeting of the Biological Society, Paris, March 17th, Cl. Bernard in the chair, M. Laborde presented the results of recent experiments on the poisonous properties of the salts of copper. He said: If the dose has been sufficient the animal dies in a state of complete prostration, presenting very marked symptoms of acute enteritis. Tests detect the presence of the salts of copper in the urine, which proves that they were absorbed. M. Galippe did not consider the experiments of Laborde conclusive as regarded the toxic effects of the agent. The subcutaneous injection of the sulphate produces local disturbances of extreme severity. But he did not think that the injection of four grammes (64 grains) of the sulphate of copper in 30 grammes of water would cause the animal to die from the poisonous effects of the agent. Laborde cited the case of a man who died recently in la Charité from the salt taken to commit suicide. In this case the bluish appearance of the matter vomited and the distinct odor of garlic showed the nature of the poison. It was replied that it was not doubted that the salts of copper were poisonous, that the sulphate might be swallowed as sulphuric acid is swallowed. But in a medico-legal point of view, it is impossible to poison a man with sulphate of copper without his being conscious of it. The taste of this salt is so exceedingly disagreeable, that a solution of ten centigrammes (1½ grains) in a litre (quart) of water will cause, if a drop be placed on the tongue, the greatest disgust. Some experts in legal medicine tell us that the salts of copper cause death by vomiting which cannot be controlled. But in the proportion of ten centigrammes to the litre the sulphate of copper will not cause vomiting, and yet it is impossible not to recognize its taste. Again, some think that the presence of even three milligrammes in the liver is sufficient to prove that the person was poisoned; but there are remarkable examples to prove the contrary. M. Boehefontaine confirmed the opinions of M. Galippe.

M. Roberteau said that, as long ago as 1873, by experiments made with the chlorate of copper, he showed that the metal was a muscular poison, and caused death by arresting the action of the heart. Syncope follows and causes the death of the animal.—*Lé Progrès Médical.*

Water Filters.—In reply to an inquiry whether a water filter, such as the one advertised by Mr. Mensing, would be efficient in depriving water of the fishy odor described in our last number, we think it would. Ordinary sponge and sand filters are useless—and sometimes worse than useless. But the *Sili-*

cated Carbon Filter referred to is altogether different. At the meeting of the British Medical Association last year, Professor J. A. Wanklyn read a paper on "Filtration," in which he cited analyses of various waters, and of the residuum of divers filtrations, and pointedly referred to the filters manufactured by the Silicated Carbon Company as being, in his opinion, *the very best means of purifying water*. It is also endorsed by other distinguished English authorities. And from our own personal examination, we are satisfied that it is the best filter which has fallen under our observation, and an efficient means of depriving water of ordinary impurities.

The New Hydraulic Elevator, manufactured by Mr. Wm. Burdon, is well worthy the attention of the public, on account of its simplicity, economy and safety. It is worked by the simple water-pressure of the water-works of any city or town provided with the same. The machine is so simple in its construction and has so few parts, that it recommends itself to any one versed in machinery. There are only three working parts to keep tight—namely, the piston and each end of the drum—which is done with what is known as a hydraulic cup-packing made of leather, kept tight by the pressure of water inside. There are several other improvements, which, in regard to safety, make this superior to other hydraulic machines with which we are acquainted. There may be two or four wire ropes sustaining the car, according to the weight to be raised. They run to the bottom of the car; one end is wound round the shaft one way and the other the contrary way, and so made fast to the shaft, that if one of the ropes should break, the shaft would instantly revolve and operate a brake, which stops the car immediately. An elevator carrying four persons, as many as would need to ride in a private house at one time, would cost about one cent for every full four-story trip, and less for shorter distances. This is estimated at Brooklyn prices, two cents per one hundred gallons, which is as high as any city in the country.

How to Keep Cool of Hot Nights.—The first condition being a good bed; a wet towel hung up in the open window is a most effectual means. And when there are bad odors or miasms afloat in the street or neighborhood, a by no means uncommon condition of city denizens, to each gallon of water used for wetting the towel add half a pint of Tilden & Co.'s **Bromo-Chloralum.** For the sick-room especially—and, above all, in febrile and contagious diseases—the use of Bromo-Chloralum in this way is of very great importance. In such cases it should be used in about one part to eight of water, and freely sprinkled about the bed and apartment, as well as evaporated from wet towels. It is both odorless and stainless.

Disinfection of unoccupied rooms, carpets, clothing, etc., after small-pox, scarlet fever, measles, etc., is most easily and effectually accomplished by the use of Detwiller, Street & Co.'s **Disinfecting Pastiles,** which give off the fumes of sulphurous and chromic acids in great abundance, and which, if sufficiently applied, destroy all contagions.

Sewer Gas Traps.—In reply to "Inquirer," who wishes to know if the "Vent to connect with rain-water leader," in Stewart's Sewer Gas Trap, is right. Certainly not, for manifest reasons: When doing duty as a rain-water conductor, sewer gas in the sink and closet pipes above its connection with main drain pipe is liable to being forced through the seals throughout the house, or the water of the traps syphoned out by suction. All such trap ventilators should be carried *above* the top of the house, independent of all other connections. With the vent flue thus carried up, Stewart's trap is one of the best in the market.

Surf-Bathing at Long Branch has been rendered more attractive this year than ever before, by the provision which

has been made for a healthful residence at the sea-shore. **The Leland Ocean Hotel,** in particular, has been divested of the old and dangerous appurtenances common to summer hotels, and, instead, established a thorough system of house-drainage by the introduction of **Jennings' Water-Closets and Latrines,** connected with a bountiful supply of pure spring water by means of the Long Branch Water-Works. Persons, therefore, who would avail themselves to the full of the luxuries of sea-bathing and a residence at the sea-shore, can now do so at the **Ocean,** especially, without danger of sewer-gas poison in their bed-rooms.

The Battery Baths are especially convenient to the down-town people of New York and South Brooklyn who would avail themselves of the luxury and benefit of sea-water bathing. Situated as they are, outside the Battery walls, where the water runs pure and clear, both ladies and gentlemen find here at all hours the largest and most select baths in the city, and all the facilities for learning the art of swimming. These baths are well kept, and worthy of the best patronage.

Literature.

Rear-Admiral Walke has honored the Navy, done the public a service and himself credit, by a substantial contribution to the history of the Civil War.* The work is a full octavo of 500 pages, printed on good paper, bound in cloth, and embellished with numerous illustrations—of which it is sufficient to say they are by the author, whose accomplishments in delineation are of at least Navy-wide repute, and constitute a valuable feature of the volume.—It is a vigorous and graphic story of the field of warfare, in which the author was engaged, not as a mere observer, but as an active participant in the scenes described. The battles of Belmont, Fort Henry, Fort Donaldson, Island No. Ten, Fort Pillow, Memphis, Grand Gulf, and the capture of Vicksburg; the engagement between the *Carondelet* and *Arkansas;* the Organization of the Western Flotilla; Expedition to Alexandria, Helena and Tunica Bend; Contrabands and Guerrillas; Surrender of the Pensacola Navy Yard and the Captures of Mobile and New Orleans, are **the Scenes** herein accounted of, with enough of the personal history of those who participated in them to give interest and zest beyond the ordinary pale of history, and make the work, in truth, a story of the war by a sailor who was engaged in it, in contrast with mere correspondents who supplied the bulletins, and whose proverbial lies find here no apologist. A commendable feature of the work is the evident desire of the author to give full credit to all who participated in the scenes described.—It contains thirty-four full-page engravings of vessels and naval engagements; portraits of Admirals Farragut, Porter, Foote and Davis, Generals Grant and Pope, and numerous diagrams interspersed in the text; and concludes with an Appendix, giving the names of all the vessels engaged, and of the officers and men killed and wounded in the service of the squadron; and an Index of the names of all persons mentioned in the work—not forgetting a just tribute to, and recognition of, the pilots and seamen who rendered almost invaluable aid to the Mississippi Flotilla throughout its perilous service.

Mahan's Critical History of the American War * is a very readable book, from a wholly different stand-point from Rear-Admiral Walke's. It is exclusively historic—on the character and deeds of our generals as claimed and published—by a non-military critic. A prefatory note from Lieut.-General M.

* Scenes and Reminiscences of the Civil War in the United States, on the Southern and Western Waters, during the years 1861, 1862 and 1863, with Illustrations and Diagrams. By Rear-Admiral H. Walke, U. S. N. New York: F. R. Reed & Company, 1877.

* A Critical History of the American War. By A. Mahan. With an Introductory Letter by Lieut.-Gen'l M. W. Smith. 8vo. pp. 461. New York, Chicago and New Orleans: A. S. Barnes & Co.

W. Smith commends it, not only as an interesting and instructive work, but as one which comprehends the science of strategy in a fair and practical aspect. "The author," he remarks, "appears to have been familiar with the ground and scenes he describes so graphically, and to have been also fully furnished with all details relating to the strength, positions, etc., of the forces engaged." The author is evidently no flatterer, and from the familiarity and terseness with which he treats his subject, we heartily commend his work as one which will not fail to interest every seeker of the truth on this most important portion of our national history.

Sailors.—The last annual report of the U. S. Marine Hospital Service* displays, in a marked degree, the criminal neglect of means for the protection and preservation of the health of seamen, and the importance of this branch of the public service. A ship, if properly constructed, kept clean and well ventilated, is a healthy abode; but no one can read this report, or the preceding reports from the same service, without being appalled by the prevalence and fatality of diseases among seamen, which even the most ordinary care would wholly avert. People generally fail to realize that persons on board ship are more at the mercy of those who regulate and control it, than are the criminals of a penitentiary to the turnkey. Hence, so long as captains and ship-masters are no better than other men, circumstances sometimes arise in which they need a common master, who has an equal regard for the health and lives of all. Laws have been enacted for regulating the structure, management and cleanliness of vessels of every class, requiring an abundance of wholesome food and water, etc., the carrying out of which is wholly inconsistent with the dreadful mortality which commonly infests them, while the weakly constitutions which characterize many young sailors, from occupying the pestiferous sinks—the unventilated, and commonly damp and filthy sleeping quarters—is nothing less than a stunting process, blunting their sensibilities, and fitting them for the low-lived associations of the grog-drinking dens which await them on shore. And, as if in mockery of such calamity, "medicine chests" are required—required at the caprice, and under the direction, of any speculator in drugs and quack medicines, with only an equal care for the health of ships' crews as the captains who accept and follow out their directions. Is it any wonder that, under such conditions, of all the diseases treated in the Marine Hospital Service, venereal diseases furnish the largest proportion; that of the total mortality 18.6 per cent. die of consumption; that 30 per cent. of the entire category of the diseases to which the sailors are subject is preventable! These are examples of the unwholesome truths brought to light by the reports of the Marine Hospital Service, to say nothing of the suffering incidental thereto, and casualties and shipwrecks consequent upon habitual short-handedness from disabled seamen. These evils suggest their remedies, and Congress will do well to promptly confer the needful authority on the chief of the Marine Hospital Service and his efficient corps, to establish and maintain such regulations in this regard as the service so eminently needs.

Public Baths and Wash-houses are the first necessity of public health; without them there can be no cleanliness of person among the working classes, and uncleanliness is proverbially, of all sources of disease, the most fruitful. Rarely have we come across a work so full of the most useful information on any subject connected with the public health, as the one now before us on the subject which heads this notice.*

*Annual Report of the Supervising Surgeon-General of the Marine Hospital Service of the United States, for the Fiscal Year, 1875. John M. Woodworth, M.D. Washington: Government Print, 1876.

*Sanitas Sanitatum et Omnia Sanitas. By Richard Metcalfe, F.R.S. Vol. 1. London: Published by the Co-operative Printing Company, Plough Court, Fetter Lane, E. C., 1877.

It begins with a preliminary chapter on the functions of the skin in relation to life, health and disease; and then follows a sketch of the rise and progress of the bath and wash-house movement in England—leading the great sanitary movement which has attracted attention throughout the world as the most beneficent work of modern progress in civilization.

The author of the work has had considerable experience in the management of parochial affairs, made himself familiar with the inconveniences of the working classes in washing and drying their clothing in the apartments in which they live and sleep, and the unsanitary results consequent upon the practice; and he has taken great pains in collecting and collating statistical returns and information on the construction and economical management of baths best adapted to the necessities of the people, wherever they have been instituted. The results of this experience and information are given with great perspicuity, so that all who are interested in the subject may profit by it.

But of the two chapters which the author has "deemed it prudent to introduce on Small-pox and Dipsomania," they are not only out of place, but absolutely injurious to the book. For, however valuable the bath may be in the treatment of small-pox or dipsomania, which is over-stated, a rehash, with approval of the old threadbare objections to vaccination when it was first introduced, and an endorsement of the fallacies of Camot, are by no means flattering to the intelligence of the author on this subject, and very much impair the usefulness of the book, which otherwise is commendable.

A second volume is promised, which will treat of the rise and progress of sanitary reform and the dwellings of the poor, with plans and suggestions for purchasing houses for what is now paid in the shape of rent for ten years, etc., which we shall look for with much interest, and with the hope that the subject will not be embarrassed by any heterogeneous fallacies.

Fruit and Bread have been made the subject of a special treatise,* from a radical stand-point, on cure-all principles, pretending to show man by nature to be a frugivorous animal, forced by necessity to the use of flesh rather than starve, but who should now be turned back to that mode of diet upon which, from the nature of his existence, he is supposed to have been first nourished.

Appended is a letter from Dr. James C. Jackson, of "Our Home Hygienic Institute," Dansville, N. Y., who recovered from a protracted state of ill-health by restricting his diet to vegetable food and making free use of the bath; and a paper by Mr. Charles O. Groom Napier, of England, on the benefits of a vegetarian diet in the treatment of intemperance. Much is made of this letter and paper by the publishers of the book, as if to show that because an exclusive vegetarian diet is good for dyspepsia and intemperance, it is equally good for those who are not so afflicted. It would be only equally absurd to advocate the habitual use of a cathartic by healthy people, because it is known to have given effectual relief in a case of constipation.

The Transactions of the American Gynecological Society* fulfill in a high degree the two things necessary to make a good medical book: original scientific material and mechanical skill in its make-up. Being the first volume of what we hope will be a long series of such publications, twenty pages are taken up with the inauguration of the Society, list of officers, fellows, etc.; after which follow contributions from Drs. Fordyce Barker, Thomas Addis Emmet, Alexander J. C. Skene, Robert Battey, and eighteen others of like re-

---

*"Fruit and Bread a Natural and Scientific Diet." By Gustav Schlickeysen. Translated from the German by M. L. Holbrook, M.D., Editor of *The Herald of Health*. New York: Wood & Holbrook.

* Vol. I. for the year 1876. 8vo, pp. 396. Boston: H. O. Houghton & Co.

pute, who are the acknowledged leaders in this particular field of medicine.

The subjects treated of are, almost without exception, interesting, and contain a great amount of original material, of value to all who desire to keep pace with the progress of gynecology. Moreover, this work, while being duly appreciated by specialists, will be of great service to the general practitioner, from its thoroughly practical character.

Society "transactions" are generally looked over and then laid aside to be forgotten; but we venture to predict for this volume a different fate. It will take its place among the standard contributions to obstetrics and gynecology, as a reference-book for both student and practitioner.

The strength of the Society is fully guaranteed by the publication of this volume of transactions of its first regular meeting, held in the autumn of 1876. But we learn that at its second meeting, held a few weeks ago, material was presented sufficient in quantity and quality to make another volume in all respects equal to the one now before us. Such good work so promptly executed, is of great credit to the members of the Society, and reflects honor on the medical profession of America.

Vaccination,* of all subjects of universal benefit to mankind, requires the most unceasing advocacy *among the people.* Among physicians it has long been a settled question; and except to meet certain complications which have been observed in the progress of scientific inquiry, there would seem to be no further room for argument. But, to avoid these complications, or, more properly speaking, accidents—the communication of other disease with the vaccinia—which possibly occurs once in a hundred thousand cases, certainly not oftener, it is well that physicians should take the utmost pains to make themselves familiar with all the conditions, and to this end we know of no recent publication more valuable than the one which heads this notice. It also comprehends a sketch of the obstacles with which the promoters of vaccination have had to contend, and suggestions for overcoming them; and advocates the necessity of such laws as will insure its universal practice, as the only effectual means of suppressing small-pox.

The Scientific Basis of Delusions* is a new name to a paper read some time ago, by Dr. Beard, before the New York Medico-Legal Society, under the title, *A New Theory of Trance, and its Bearings on Human Testimony,* and subsequently published in the *Journal of Nervous and Mental Diseases.* It consists of a careful collation of remarkable instances of trance from authentic sources, and an effort to show that the state commonly known as trance consists in the displacement of the will power by the concentration of cerebral action to a limited space, by which the co-ordination of will power, for the time being, is lost. This hypothesis is summed up under conditions "First" to "Tenthly," but still so imperfect, that the author informs us that "the present monograph . . is designed as an introduction to a work on the Philosophy of Delusions, which will aim to unfold in detail the phenomena of the Involuntary Life," etc.

* As a Preventive of Small-pox. By A. C. Chapin, M.D., Vice-President Toledo Medical Association, Member Ohio State Medical Society, etc. Pamphlet, pp. 90. Toledo: Brown & Faunce.

* Pamphlet. By George M. Beard, A.M., M.D. New York: G. P. Putnam's Sons.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. SEPTEMBER, 1877. NO. 54.

RELATION BETWEEN TOPOGRAPHICAL SURVEYS AND THE STUDY OF PUBLIC HEALTH.*

By JAMES T. GARDNER, Director of the State Survey of New York, and Secretary of the American Geographical Society.

The world's old but tireless search for the sources of health has taken a new direction. Primitive man found, as he thought, the direct origin of all ills in deities whose vacillating human passions must be propitiated by gift and sacrifice. Then dawning science, recognizing the force of atmosphere as a bearer of heat, cold and moisture, sought to explain the distribution of prevailing diseases by influences of climate, and the popular mind of to-day still clings to many of these doctrines, and under the stroke of pain, bows in blind submission to mysterious powers of the air. But a revolution is taking place in modern thought. The whole tendency of recent investigations proves that *the controlling cause of our most fatal diseases is to be found in local conditions.*

Powerful as are climatic influences in modifying forms of life, science teaches that death dwells not so often in the "viewless winds," which man can neither direct nor restrain, as in the earth beneath his feet, whose form and hygienic characteristics he may mould or change.

Can any one read in the report of the Board of Health of New York, that two-thirds of the deaths from diphtheria in that great city are among occupants of first and second floors, and not feel that the ground about our dwellings is playing a fearful part in swelling the daily list of deaths?

Fourteen years ago Dr. Henry I. Bowditch demonstrated, before the State Medical Society, that certain conditions of the soil slew annually, in Massachusetts, a thousand of her citizens by consumption alone. I come before you, therefore, as a student of earth's surface-structure, to call attention to the fact that *sources of many prevailing diseases are to be found in various natural conditions of earth's form and substance,* as well as in soils polluted by man. *It cannot be too clearly understood by every intelligent householder, that the topography*

* Abstract of Address delivered before the American Public Health Association, Boston, October 6, 1876.

and geology of his immediate neighborhood are exercising a controlling influence on the condition of his family; promoting either health and happiness, or sapping the lives of those he loves. How important, then, that all should know the earth-features favorable to human development! And yet the physician cannot, to-day, direct, with certainty, the anxious inquirer to those localities best suiting physical welfare, nor warn him of unseen dangers surrounding his residence. Laws governing this relation of earth and man are only partially known or guessed at. The time has come when they ought to be determined and taught in every public school. Our present knowledge of the subject is too general and undemonstrable to be either convincingly taught or practically efficient.

For a hundred years a connection between certain topographical features and malarial fevers has been noticed. Some marshes produce miasma, was the sum of past observations; but malaria appeared accompanying such varied topography that no law of its production was seen until latterly, when character of rock and soil is shown to be as important as conformation of surface in promoting or suppressing malarial fevers, and also rheumatism, cholera, diphtheria, pneumonia, consumption, and many other of man's worst ills. *These diseases appear to be dependent both upon circulation and excess of soil-moisture.* The connection of geological and topographical structure with health will then be evident, when it is remembered that *natural drainage results from combined action of configuration, character of soil, constitution of underlying rock, and the form of its surface.* These four elements regulate natural drainage. Each must present favorable conditions, or deadly waters will accumulate on the surface or in hidden strata. *Remember, too, that no plan for artificial drainage can be completely successful unless based on a thorough comprehension of the natural drainage system of the area under treatment.*

The region above the Palisades on the Hudson furnishes excellent illustration of these statements. The plateau fronts the river eastward with a bluff 300 feet high, and westward slopes gently to the Hackensack valley; its altitude and proximity to the sea both tending to temper the summer climate. All topographical conditions of unusual health seem here present, and yet malarial diseases abound. The reason for this will probably be found in the configuration of the rock. The dense basalt underlying the thin soil of the plateau, absorbs almost no water. Its surface, originally nearly level, was worn by glacial action into low swelling ridges and shallow rock-basins, many of which, having no outlet, hold stagnant water as great saucers would. The earth conceals them; but their effects are often worse than those of exposed ponds. If the rock were either fissured or porous, the height of the plateau would insure perfect under-drainage; but as it is, we have probably on the Palisades topographical conditions favoring health, while underlying structure is the governing cause of prevailing diseases.

In contrast, consider the formation of the Helderberg plateau, lying also near the Hudson river.

An escarpment 1,000 feet high bounds, on the eastern side, the table-land, composed of horizontal limestone resting on shales.

I recently examined the natural drainage system of this elevated

region. From the more level parts water does not pass off by surface streams. Low undulations divide these areas into many separate basins, each draining toward its own centre, where a funnel-shaped opening in limestone receives the disappearing flow, whose future course is subterranean. These basins are from a few acres to three or four hundred in extent. Where one covers about five square miles a pond is formed at the point of central drainage, finding outlet through fissures of the limestone below. The plateau's elevation insures that these waters sink at once many hundred feet or escape in springs along the cliffs. The Helderberg highland presents, therefore, an admirable illustration of one of the combinations of topographical and geological structure necessary for healthfulness. But this same Helderberg limestone, under different topographical conditions, has proved one of the most powerful producers of disease.

When cholera prevailed in this country, the mortality at Sandusky was excessive, and some observers hastened to the conclusion that limestone regions were especially liable to the terrible scourge. The press gave publicity to the hypothesis; thousands of people were alarmed, and doubtless the disease was aggravated over limestone regions by excited fears. The truth, as explained by the State Geologist of New York, Professor Jas. Hall, appears to have been this: Sandusky is, indeed, underlaid by Helderberg limestone, through whose many open fissures much foul surface-water of the city easily and certainly found its way downward; but, as the streets have an elevation of only thirty or forty feet above the lake, the drainage sank this small distance and there remained, while its poisonous gases rose continually through the same open fissures by which the water descended, proving that the very geological conditions which, in combination with other topographical features, appear most favorable to health, here spread beneath Sandusky a deadly network of open drains with no outfall.

If further facts are necessary to illustrate the powerful part that earth's structure is playing in our struggle for life, turn to those reported by Dr. Henry I. Bowditch, in his admirable paper on "Consumption in New England, or Locality one of its Chief Causes." His map of the distribution of consumption in Massachusetts shows towns where the disease is most rife, side by side with those where it is rarest. Even in one-half of some towns consumption will prevail, while the other is almost free. Here, doubtless, the lungs are most affected by local causes. What, then are these local causes? Dr. Bowditch thinks that the most powerful agent is "soil moisture," resulting from certain combinations of geological and topographical structure. The facts stated are many and significant, but perhaps none are more marked than those from the town of Greenland, N. H. This town has three distinct divisions of soil: 1st. A higher and dryer sandy plain. 2d. A medium, fertile, rather moist portion. 3d. Extensive low marshes. Seven hundred and fifteen residents are about equally divided between the three districts. During ten years three people died of consumption on the sandy plain, five in the medium, and ten in the wet region. Here, out of the same number of people, three times as many died in the lowland as on the higher ground. But in the town of Saccarappa, Me., where the hills are of

a clayey loam, and the valleys gravelly, thirty-one per centum of the deaths on the hills were from consumption, and only sixteen per centum in the plain district.

One cannot read such facts, placed in their proper relation in Dr. Bowditch's paper, without being convinced that there is an intimate connection between earth's surface structure and the disease which causes from sixteen to thirty per centum of all deaths in New England. At the same time, however, the reader is forced to acknowledge that Dr. Bowditch had not at command those facts necessary to prove exactly what structural features produce consumption. Why he did not have the facts, and why no physician can now have them, will be evident from the illustrations that I have given of the probable cause of disease on the Palisades and at Sandusky. The source of the trouble in these regions is doubtless a geological feature which none but a special student of structure could discover. In this grave matter I am forced to speak of probabilities, when we ought to have the certainties of physical law; because the statements laid before you prove not only a vitally important hygienic connection between man and geological and topographical structure, but they show also how vague and uncertain our information is concerning the laws governing this relation. *These laws can never be demonstratively known until a detailed topographical and geological survey is made of some large area, and followed by a thorough sanitary survey of the same region.* I am before this association to-day principally to impress this point, *that the geographer and physician must work together in study of the public health; and that to discover causes and determine laws they must pursue the only method known to science—first collect and classify facts, then compare them.*

The geological and topographical structure, controlling, as it does, both natural and artificial drainage, must be determined by observers trained in these special branches of science. Their labors must result in maps and diagrams, picturing to the eye earth's surface, configuration and hidden anatomy, and in records of the chemical constituents of rocks, soils and waters. Every hill, every stream, each plain, each pond, each swamp, must appear upon the map, and all buildings, roads and important artificial works, in their true relations to the natural features. Then let the philosophical physician place beside these structural maps and records his carefully collected statistics of diseases of this region, arranged according to geographical distribution, and the general laws governing the relation of earth's features to health will unquestionably appear. The conditions that doubtless modify and mask these laws in many localities, will also be detected by referring to recorded observations of the sanitary surveyors in each district. Gravelly slopes might, in general, prove extremely healthful, while in special cases those residing upon them would, perhaps, be excessively liable to disease. Here the records of the sanitary surveyor would, perhaps, show cesspools, so placed that their poisonous waters would permeate the soil and pollute the wells. Without a record of the existence and position of these sinks, the law of the hygienic action of structure would appear to be reversed, when in reality the results exactly accord with the general law. The very geological and topographical conditions which normally are most

healthful, easily change under human treatment into sources of sorrow and death.

Careful records by sanitary observers must thus supplement the work of topographers and geologists, before the necessary data can be supplied to make an investigation, which shall render laws of healthfulness in residence sites so evident that every school-boy may know them.

From the united results of topographical, geological and sanitary surveys of a large area, I believe it possible to deduce, with absolute certainty, the principal causes of prevailing diseases, and to point out practical remedies that will reduce the death rate to one-half its present amount, and banish from the world an untold weight of suffering and sorrow.

Can any triumph of applied science be greater than this? Will there be found, hereafter, any excuse for us as an association if we neglect, first, to determine what are the only methods by which reliable facts can be collected to solve this great problem—the cause of prevailing diseases—and then to urge upon the country those measures necessary to secure the making of such a collection at the earliest moment?

The admirable report of our honored Secretary, Dr. Elisha Harris, and Mr. Fred. Law Olmstead, assisted by the geologist, Prof. Newberry, on the causes of prevailing diseases on Staten Island, and the improvements necessary to secure healthfulness, is a model of what can be done in a private way toward solving the general problem; and it is to these and similar efforts that we owe our knowledge of the general lines upon which to pursue final investigations. But these gentlemen who have labored so devotedly to gather data, which, though defective, still indicate laws, are the ones who most clearly understand that *the great body of structural and sanitary facts necessary as a basis for the science of public health must be collected by trained corps of observers acting under State governments.* Private effort has, I believe, already demonstrated that *State topographical, geological and sanitary surveys must be made, before the most important laws of health can be determined.*

If this be so, then the American Public Health Association ought to publish the fact, and the proof of it, throughout this broad land, teaching all legislators that the health and happiness of every family depend on the prosecution of State surveys.

———o———

Remarkable Artesian Well.—One of the most remarkable artesian wells in the world is that of Gronelle, in the paris basin. It was undertaken in 1834, up to which time no successful artesian sinking had reached a greater depth than about 1,000 feet. It was calculated that the water-bearing stratum sought for would be reached at a depth of 1,500 feet; but that was not deep enough. The boring continued, with intervals, until 1841, when, on the 26th of February, the boring rod was observed to descend suddenly several yards. In a few hours the water reached the surface, eventually rushing up with immense violence, mixed with sand and mud. But the sand and mud soon ceased, leaving a magnificent flow of pure water, which has continued ever since. A high tower is erected, and the water rises through the pipes with sustained force and volume, to the reservoir at the top, at the rate of half a million gallons daily.

CRIMINALITY.*

By W. G. Stevenson, M.D.

Proceedings of New York Medico-Legal Society, May 2d, 1877, Prof. F. H. Hamilton, M.D., LL.D., President, in the Chair.

I now come to inquire relative to the heredity of the perceptive faculties: the senses of touch, sight, hearing, taste and smell; these are the inlets through which impressions of the outer world reach the sensorium, and by it are converted into conscious sensations.

Here, too, we find that the law of specific heredity obtains not only in the quantity but also in the quality of sense perceptions, as a single example will illustrate: the senses of smell and sight in the dog are markedly different in degree from the same senses in the bee or bat, and these, in turn, develop the sense of touch to a degree unknown to the dog; these differences are the birthright of the species, over which heredity has absolute control.

The individuals of each variety, however, have their own personal aptitudes, which are exceedingly varied, and for a moment we will inquire as to their transmission.

Touch is the fundamental sense, giving the most essential evidence of the external material world, through the impressions of hardness, softness, elasticity, heat and cold. Not only is there a marked difference between those who inhabit the arctics and the tropics in their ability to endure extremes of temperature, but tactile sensation also varies so that what is a painful sensation to one will scarcely be felt by the other; the Lapp is so insensible to tactile impressions, as to almost justify the assertion "that you must flay a man to make him feel."

Of the other four senses I will only say that sight is decidedly influenced by heredity, as instanced in those cases of myopia and hypermytropia which depend entirely on mechanical conditions and which are perpetuated through generations.

The Fuegians have acquired by use and fixed by heredity the power of a long range of vision, surpassing even the long sight of the sailor, while short sight is engendered by intellectual pursuits.

Daltonism, or color blindness, is hereditary, as is also the sensibility of the optic nerves from partial anæsthesia to perfect amaurosis.

In hearing, further evidence is added of heredity in those whose audition is limited to the diatonic scale as well as those who have a "musical ear" with wide compass, as exhibited in one hundred and twenty members of the Bach family or in the three Mozarts.

Smell and taste are also transmitted functions, as illustrated in the

* Continued from page 361.

acute scent of the canine race, which enables the dog to distinguish, with remarkable accuracy, the odors belonging to different animals and men. Gratiolet states that a young dog that had never seen a wolf became greatly excited on smelling an old piece of wolf skin; this was evidently the result of heredity.

In man the sense of smell is much less acute than in lower animals, and yet, some races have it extraordinarily developed. The maroon negroes of the Antilles have the imputed ability to distinguish, by this sense alone, the trail of the white from that of the black man.

Some families possess strong antipathies of smell and taste for certain articles of food, as cheese, strawberries, etc., and it is possible that cannibalism in the offspring of savages results from an hereditary taste for human flesh.

Thus briefly have been presented a few facts relating to the heredity of the senses, and it now remains to observe its influence over those faculties or functions which are made manifest through the action of the ideational or cerebral centres.

The masterly labors of Galton & Ribot have established the fact that a general law of heredity obtains in the mental, as well as in the perceptive and physical life. Memory, as a physical process of nutrition, making record of the products of ideation; imagination, either creative or reproductive, as witnessed in poets, painters and musicians, are under its modifying influence; as is also the highest exhibition of mentality in which the ego, independent of objective conditions and sensations, observes only subjective conditions and phenomena; and the emotions, reason and will manifest their energy, as exhibited in science and literature, or by the statesman and soldier.

In each and every case the evidence confirms and strengthens the claims of inheritance.

Thus do we see the influence of heredity in forming the character of instinct, perception, intellect and will, and there yet remains the interesting question as to its influence over the appetites and passions, including all the moral impulses, either normal or abnormal, of man's nature, and the pathological conditions to which his physical and mental life are subject.

This brings us into the immediate presence of the criminal, and invokes an analysis of those physical and mental antecedents which give the bias to his individual character, and which so irresistibly impel him to crime.

Testimony is conclusive in establishing the heredity of many neurotic diseases: such as a simple nervous temperament, neuralgia, chorea, hysteria, hypochondriasis, inebriety, criminality, insanity, whether perceptional, intellectual, emotional, volitional or maniacal; or as general paralysis, idiocy and dementia.

Assuredly it is a fact which none deny, that the offspring of nervous, insane, epileptic, inebriate, consumptive, scrofulus or criminal parents, are more liable to develop some special form of disease or character, than those whose parents are free from any vitiating cause. They have organizations which render it not only more possible, but more probable for ancestral vice to appear, but the particular form this vice may assume is not necessarily determined by the parent.

Many neurotic diseases, like physical forces, are correlatives of

each other: they are metamorphosed oftentimes in their transmission, so that what was neuralgia in the parent is chorea or hysteria in the offspring: or chorea or hysteria may be transformed into epilepsy, and this into insanity, and the insanity may, in a third generation, develop phthisis, dipsomania or criminality; or, conversely, criminality or drunkenness may engender epilepsy or madness; and thus through the entire category of nervous manifestations, testimony is added to sustain the fact that cause and effect are as invariable in the intellectual and moral, as in the physical world; and that through heredity the physical, intellectual and moral forces of the ancestor largely determine the physical, intellectual and moral forces of the offspring.

In this connection it is important to remember that the conditions or factors which so influence character may lie dormant in one generation, existing only as potential elements which may spring into activity at any time when influenced by favorable surroundings.

There is a diminished stability of organization; an equilibrium more easily disturbed, and which, when moved from its balance, is less liable and less capable of resuming its original position. A few examples will illustrate this important question.

Dr. Morel reports an educated gentleman who, although addicted to excessive alcoholic indulgences, occupied an important position; his fifth and only surviving child exhibited pleasure in cruelty to animals when yet a mere lad, was incapable of profitable study, and at the early age of nineteen insanity was fully developed. A son of an eccentric and intemperate father had cruel propensities in early youth, was inebriate in later years, and eventually died of general paralysis. A man dies of chronic alcoholism, leaving seven children, of whom the first two died of convulsions, the third became insane at twenty-two, and died an idiot; the fourth was suicidal, culminating in idiocy; the fifth was misanthropic; the sixth, a daughter, suffered from hysteria with intermittent insanity; while the seventh had good intelligence, but was nervous, having gloomy forebodings as to his mental future.

The same high authority cites a family history in which the great-grandfather died a drunkard; the grandfather, also given to drink, died a maniac; his son, though sober, was hypochondriacal, and of homicidal tendency; while a son of the fourth generation terminated the family line in idiocy.

Dr. Morel also states that an examination made by himself into the mental condition of 150 children of the Commune, from ten to seventeen years of age, taken from behind the barracks with arms in their hands, revealed the sad fact that alcoholic drinks had, through inheritance, stamped upon them physical, intellectual and moral degeneracy.

Da Gama Machado affirms that a wealthy lady known to him had an overpowering passion for gambling, which she would continue through the night. She died of consumption. Her son developed the same liking for gambling, and also died of consumption; while his daughter inherited a similar passion and died of the same disease. Who is there so bold as to deny the influence of organization in such examples?

A notable instance of inherited organization leading to crime is

given by Dr. Despine, of three brothers, the first of whom had a son who received a life sentence for robbery and murder; the second had two sons, both of whom committed murder, and a grandson who was transported because of robbery; the third brother had seven children, of whom the first committed robbery and died in prison; the second was accidentally killed while attempting burglary; the third was convicted for robbery; the fourth and fifth (daughters) were imprisoned for theft; while a child of the seventh son was condemned to death for robbery and murder.

There is record of two sisters, aged respectively thirteen and seventeen: the younger had gentle maners and industrious habits, while the elder was the opposite, and endeavored to induce her sister to murder her mistress; failing in this, she endeavored first to strangle her sister and afterwards to commit the murder, but was unsuccessful in both attempts. She was arrested and brought to trial, when it was learned that her grandfather was given to homicidal impulses, and had destroyed his own wife. Here is seen a case of atavism, where a vice of character lay dormant during the second generation, but became an active destructive force in the third.

That suicidal monomania is influenced by heredity is a fact attested by all Alienists, and Esquirol gives the history of a family in which the grandmother, mother and granddaughter committed suicide.

A neurosis existed in the family line of the Cæsars, which developed epilepsy in Julius Cæsar; made a valetudinarian of his nephew, the Emperor Augustus; disfigured with disease the face of Tiberius; caused Caligula to be pale, sleepless and delirious; and gave Claudius a weak physical organization, while the excessive cruelty of Nero may find some excuse in the fact that the morbid nerves of the Cæsars had in him caused insanity.

Moreau gives the history of an innkeeper, who, during the reign of terror, robbed and murdered many who came to his house; he was denounced by his daughter and brought to trial, but escaped conviction; the daughter who denounced her father was nearly murdered by a brother, and subsequently committed suicide, as did also another brother; while a sister was epileptic, imbecile and paroxysmally violent, and her daughter, being the third generation, was maniacal, and the family line terminated.

Here, then, is seen in the first generation acute intelligence, but an absence or perversion of the moral sense, as evidenced by robbery and murder; suicide, homicidal violence, epilepsy, inebriety and mania marked the second generation; while with mania in the third generation, this degenerate family line was extinguished. What a commentary have we in these examples, on the heredity of physical, intellectual and moral alienations.

Thus is seen the immediate and direct results of a bad inheritance, and while we cannot foresee the type of degeneration which will follow ancestral vice of character, yet we can prophetically declare that some form of physical, intellectual or moral degeneration will come from it, and thereby determine the possibility of crime.

Having first established the actual and possible inequality of man in physical, mental and moral endowments, I have endeavored to demonstrate the potency of heredity in transmitting the specific and

personal differences, and, from the many facts before us, I reason that the law of the conservation of energy is as well established within the realm of mind as in the external physical universe. It permits mutability, but negates destructibility. Motion may be transformed into heat, or heat give place to light or electricity, which again may be reconverted into the original motion, but throughout all the stages of mutation nothing is lost and nothing created, but everything is conserved; the form of energy is changed, but its quantity and essence are the same and indestructible. So, too, with nervous and mental phenomena. A simple peripheral impression may terminate in the spinal centre, causing a simple motor impulse through excito-motor reflexion, or the impression may pass on to the sensory ganglia, and there become a conscious sensation from which the same motor impulse results through sensori-motor reflexion. Instead, however, of causing a motor impulse directly through either the spinal or sensory centres the impression goes onward and upward to the cerebral hemispheres, where an idea is evoked, and the motor impulse results from ideo-motor reflexion—or the idea may first become emotional, or, passing by the emotional centres, it may call forth the intellectual operations, and then directly through the ideo-motor centres or indirectly by volitional reflexion, the same motor impulse results, thereby demonstrating not only the correlation, but the conservation of nervous energy.

The Brain, which represents the highest and noblest evolution of matter, and in functional activity is exalted over every other nervous centre, is the organ of the conscious mind; by which I do not mean a concrete substance or an objective entity of definite and unalterable power, but simply an abstract conception or definition of brain function. It is a special exhibition of organization exclusively pertaining to the hemispheres of the brain, as the sight is to the eye or hearing to the ear. It has not, within human knowledge, a tangible material existence, but, like heat, light, electricity or gravitation, it is a condition of matter, and is, independent of its nature or source, dependent on cerebral organization as a medium through which to manifest its energy. To deny that mind once created, may, and does, exist in some varied or unknown condition of force, independent of organization, would be to affirm that energy of any kind, once created, in any way or by any cause, can be annihilated, which idea cannot be entertained. But since the existence of mind is known only through the manifestations of its workings, and since these manifestations can exist only through nerve tissue, we are justified in affirming that nerve energy is correlated with nerve tissue, and that its degree of power depends entirely on the evolution of nerve structure. Where there is no brain there is no conscious mind, no thought, no evidence of ideational life. These exist and develop, or retrograde and perish, in direct proportion as brain tissue exists and develops or degenerates and dies.

The late Sir Henry Holland, when weary from physical work, forgot every word of German, which returned to memory when strength was restored. Such evidence as this, together with the fact that mind is enfeebled under conditions of physical disease, and during the decline of strength in advancing years, points directly to the conclusion

that mind is affected by matter, and the condition of mind, either as active or latent energy, depends upon the degree of brain development.

This conclusion becomes an unanswerable and aggressive truth, when we further consider that the type of mental and nervous diseases, which exist in different persons, is exactly that form which is in accord with their respective mental developments. Ideational insanity cannot exist in the infant, because the brain development has not yet rendered possible the existence of ideas.

So too with savages or any class of men of inferior organization. The mental diseases which afflict them are necessarily of a lower order, so to speak, than exist in organizations higher in the scale of evolution, and any scheme of philosophy which ignores the facts presented by disease, or non-development of brain structure as found in infancy, lower types of man, and in lower animal life, evidently denies itself of that which is most essential to a perfect knowledge of the human mind and its mysterious phenomena.

Where mind does not exist, evidently it cannot degenerate, and in its unfolding evidently its degeneration can only correspond with its progress. Hence we find that imbecility is the most common form of insanity in savages, and idiocy in children, conscious mind, in both cases, being either absent or arrested in its development. Moral insanity, in like manner, cannot exist where the moral sense does not exist. Dr. Maudsley justly says that "before the native Australian savage, who has not in his language any words for justice or vice, nor in his mind any such ideas as these words convey" to us—before he can become morally insane he must be first elevated to our level of humanity and civilization. "Development must precede retrograde metamorphosis, and mental organization must precede mental disorganization."

The same facts and arguments apply with equal force and pertinence to all expressions of volition, which is not an entity of self-determining powers, by the exercise of which man is capable of assuming virtues, arrogating phases of character and performing special acts whenever it pleases his arbitrary purposes. Neither has the will an autocratic control over actions or ideas, but it represents simply the highest exhibition of nerve force, as brain does of nerve matter, and is directly dependent on cerebral organization for the quality and force of its manifestations; and since this organization by inheritance is impressed by ancestral peculiarities, it is evident that it will to that degree modify the mental superstructure arising therefrom.

Well directed education and change of surrounding conditions can undoubtedly greatly modify the nature of mental life, but cannot entirely overcome and negate that which lies in silence and in strength behind—the organization which so imperiously directs every action and thought. Accepting, then, the physiological fact that conscious mind and brain are intimately united as cause and effect, and that the character of the mind depends primarily upon the nature and degree of molecular brain development, which development is measured according to the inherited capacity of the brain tissue, which capacity differs in each and every person, we must believe that each individual has, through his inherited organization, a special power of actual and possible brain energy, and that, in order to justly judge

of his actions and his responsibilities, his own organism should furnish the only reliable standard by which to determine facts.

By this rule only can the demands of justice be satisfied in dealing with that large class of humanity known as criminals, whose deeds have furnished so many pages of the world's history.

To the question, "Why is one man a criminal?" I answer, for the same reason that another is a moralist, or an honest, law-abiding citizen. Either an inherited organization having morbid antecedents gives the bias to development and action, or a constitution, originally well endowed, is so modified by morbid influences as to render possible subsequent moral alienation.

Criminals are such, either because they inherit a brain structure potentially incapable of generating moral faculties, or, through the influence of repressive environment, the development of mind does not evolve sufficient moral strength to guide and control the lower propensities of man's nature.

In either case, however, criminals are, generally speaking, diseased elements or members of the body politic, which are born of it, belong to it, and are of necessity correlated with it in every stage of human evolution; positively diseased in that, as a class, they bear evidence of bodily infirmity, neurotic diseases largely predominating, either in the milder types, or as epilepsy, inebriety and insanity; these, together with scrofulous and tuberculous development, determine with certainty the fact of bodily and nervous degeneration.

Negatively, this position is strengthened by the fact that, being perfectly conscious of punishment received for past offenses, as well as a certain assurance that retributive justice will be executed for every offense in the future, yet they close their eyes to all results, and apparently without dread of the coming day of wrath, rush wildly, heedlessly, remorselessly into the seething vortex of criminality, and pause not till the strong arm of the law interposes for the protection of human society. They will reason about the crimes perpetrated, but do not comprehend the moral wrong committed.

This view is sustained by the learned Dr. Despine, who, speaking with the authority of knowledge, says: "There must be something abnormal in the disposition of criminals, when they yield with the utmost facility to desires which would excite the strongest repugnance and horror in a truly moral man."

"Does not this abnormal state reveal itself in the clearest manner, when, contrary to what poets and moralists have represented, we see the wretch who has committed crime exhibiting no symptoms of remorse, but rather a disposition to repeat the same criminal act?" The criminal does not necessarily possess an unhealthy body, as commonly understood, although generally there exists a latent neurotic bias, which may, and frequently does, develop into actual nervous or bodily disease; inebriety, epilepsy and insanity predominating.

Intelligence may be acute, the perceptive and reasoning faculties existing, it may be, in a high state of development. But with all this there is moral deficiency; a perversity of thoughts and desires, with violent passions, which, being uncontrolled by the moral faculties (not necessarily because the perversities are greater than in other men, but because the moral force is less), there result immoral, crimi-

nal acts which are correct exponents of the organic cause by which and through which they alone exist.

A striking example of acute intellectuality with defective moral sense is presented in the case of the noted scholar and criminal, Ruloff, who expiated his crimes with his life at Binghamton in 1871.

He possessed a mind remarkable for its power of critical analysis and subtle reasoning, which, with a retentive memory, enabled him to become, what he really was, a profound scholar in linguistic research; his intelligent knowledge enabled him to direct at times his own defense, which was marked by ability and skill; and yet, with all this intelligence and intellectual vigor, he was a moral imbecile; the moral sense was undeveloped, or, at most, but to a limited extent; while the intellect was strong and well developed.

He was without regret or remorse for the crimes he had committed, and had no fear or dread of the doom awaiting him; affirming that his acts were "without regard to the existence of a God or a devil, a heaven or a hell," and adding that this had been to him a pride during all his life. He maintained this indifference to the last, refusing to have even a prayer offered in his behalf.

This accords with the expressed views of Dr. Despine, whose investigation of crime and criminals has been both extensive and profound, and who states as a general fact that criminals are "marked by the absence of all moral remonstrance before the act premeditated, and the absence, not less complete, of all remorse after the accomplishment thereof."

To my mind such facts give evidence of an impaired moral sense resulting from non-developed or degenerate nerve centres.

It is no more difficult to accept the belief that brain development in the evolution of mind may stop short of completely unfolding the moral faculties, than it is to believe that it may, as it certainly does in many cases, stop before high intellectuality is attained; and the moral sense being the highest as well as the last in the gradation of mental evolution, it is the first to exhibit evidences of degeneration, which, unless checked or neutralized by some controlling influence, increases in each succeeding generation, until at length the morbid action culminates in its positive and irreparable destruction; and what then? with only a feeble moral sense, or perhaps with its total obliteration, what incentive is there in the human mind to shun wrong-doing? None at all; but man is left to battle with the storms and tempests of life without a helm or pilot to guide his frail bark to a port of safety; but tossed about upon the angry billows of temptation, is it indeed strange if, by and by, his craft is stranded on the shoals of petty crimes, or goes down to destruction in the dark, cold gloom of murder.

Evidently then, in some instances at least, criminality is not the immediate offspring of uncontrolled or vicious passion or impulse which might be restrained by an effort of the will; but it represents a symptom of physical degeneration of the nerve centres, and the perpetrated crime itself is but an outward expression of the inner condition of man's development, akin to that condition of mind which generates low and vulgar ideas having their counterpart in brutal instincts and words. In truth it is undoubtedly connected with dis-

eased or non-developed nerve structure in the higher centres, as is epilepsy, inebriety, pauperism or insanity, and which may be to a degree, and in some persons, remedied or modified by proper treatment and education; but where, as is too often the case, it results from a vice of organization incapacitated by a bad descent from evolving sufficient moral sensibility, it then becomes an irresistible fate; the cause is in past physical antecedents, and as a sequence of this cause the criminal takes his legitimate place in human society. Yes; he is a legitimate member of society, in that his individuality sprang from, and is correlated with, ancestral taints of character, over which he has no control; and although free under civil law to choose his following as a member of society, to shun its wrongs and hold its virtues, yet, being bound through heredity by the forces of his organization, he occupies a natural position among the vast throng of mortals whose individual acts, whether of virtue or of vice, when aggregated, constitute the history of humanity.

Mr. Brockway, of the Detroit House of Correction, in a paper before the International Penitentiary Congress of 1872, says: "The species of crime to which a person is addicted depends upon the circumstances which surround him, or upon inherited tendencies, or both; but whether a man will commit crime at all depends, to a great degree, upon his constitutional characteristics." He argues the existence of moral imbecility, incoherent mental development, and feebleness of will power, and affirms that "this undeveloped state, this paralysis, as it were, of the moral faculties, though, no doubt, largely due to the want of proper early education, is often inherited from progenitors."

Mr. Dugdale's intelligent investigations of the relations of crime, pauperism and disease, have multiplied facts which bear testimony of the power of inheritance to establish organisms which are unable to successfully resist the temptations and evils of life.

The history of that most remarkable family line, known as the "Jukes"—extending through seven generations, and including a tabulated report of 709 individuals—furnishes abundant material for the elucidation of the relative influence of the two important factors which influence individual life and action—heredity and environment—and authorizes me to accept as true the statement of Dr. E. Harris, that "the criminal is a morbid product of the community, the family and the various circumstances of daily life in which his childhood is spent." "The departure downward, from virtue to vice and crime, is undoubtedly possible in the career of any youth, because the passions ungoverned, the will and conscience stupefied, perverted, or even occasionally overcome by disease—as in epilepsy, or by wrongly indulged appetites—may result in criminal as in all sorts of vicious acts." "But the number of really healthy, vigorous and reasonably well-born and well-trained children who ever fall into a career of crime, is exceedingly small." "Even the accidental fall of such persons admits of rescue."

"The habitually criminal classes spring almost exclusively from a different stock; their youthful days were spent in vicious indulgence, or amidst the degrading and blighting surroundings of physical and social defilement, with only a flickering of the redeeming and saving

influence of desire and hope for a virtuous and useful life, and at the late day when the laws against crime have overtaken them and brought them before courts and consigned them to prisons, the habits of vicious thought and criminal action have acquired the strength and quality of instincts."

"Glancing at mankind as a whole, what," asks Despine, "do we see?" "Anomalies, monstrosities. In a physical point of view by the side of men well formed, of robust health, of beautiful and noble forms, we find beings sickly, weak, ill-shaped, puny."

"Viewing men intellectually, what do we see?"

"The same differences. By the side of men of genius, who create sciences, who produce the marvels of the imagination, which in literature and in the arts excite our enthusiasm, we find vulgar intelligences, insensible to the creations of genius and the splendors of nature, incapable of lifting themselves above the direction of their business and the material wants of life."

"Descending in the scale we meet, at last, with the weak-minded, the imbecile, the idiotic."

"These natural imperfections, these anomalies, these infirmities, these monstrosities, which we see in the physical and intellectual world, exist also in the moral, as marked, as numerous and as varied." "Just because the man is in health, because he has command of his ideas, because he reasons, because he is intellectually intelligent, it has been thought that he must be also morally intelligent."

The error of this conclusion must be apparent to all who will give thought to the many examples in every community which bear witness that, with the existence of ideational power, there may be present a weak volitional force as well as a weakened condition of the moral faculties; or they may be altogether absent.

And the absence of the moral faculties, "whether due to the fact that their precious germs, congenitally too weak to exhibit themselves spontaneously, have not been developed by a right moral education, or to the fact that the germs of these faculties are altogether wanting, constitute the saddest of the monstrosities to which the human race is subject."

Dr. Bruce Thompson, physician to the prison at Perth, Scotland, states "that of 5,432 prisoners, he found 673 whose mental state appeared to be unsound, though they were not, according to general opinion, proper subjects for an asylum.

At Perth, out of 904 convicts, 440 were recommitted, showing the terrible power which directed them, in spite of the reformatory influences which had been exerted. In a house of detention 109 prisoners came from fifty families, one family having furnished eight.

"The organic condition," says Dr. Despine, "connected with these grave moral anomalies, without being a real disease" . . . "has, nevertheless, a relationship more or less remote, but indubitable, with the pathological conditions of the brain which produce the different varieties of insanity."

"The cases in which the children of the insane become ordinary criminals are too numerous not to attribute the origin of this fact to an hereditary organic influence."

Let a few facts speak the results arising from criminal organiza-

tions, and teach how difficult it is to explain these facts, independent of inherent or acquired organic conditions.

In Austria, during the years 1868, 1869 and 1870, 54 per cent. of women, and 59 per cent of men, prisoners, had been previously convicted.

In Belgium, in 1872, 78 per cent. of the prisoners had served previous terms of imprisonment.

In Russia, from 60 to 70 per cent. of the sentenced prisoners are recidivists.

Italian bagnios give the interesting information that 27 per cent. relapse to criminality within the first year after discharge, 16 per cent. within two years, and 57 per cent. beyond that time. While the penitentiary convicts relapse 37 per cent. the first year, 19 per cent. the second year, and 44 per cent. after this period.

In Switzerland, the reconvicted average from 19 per cent. to 45 per cent.

The statistics of the United States, relative to recidivists, are too imperfect to admit of accurate comparison. The benefits to be derived from the conviction and imprisonment of criminals increase in proportion as penal and retributive methods of punishment give place to the more enlightened reformatory methods. This is especially so among the young who are sent to reformatory schools; the results, in the various institutions in this country, yielding from 60 per cent. to 75 per cent. of reclaimed juvenile criminals.

Yet, with all this there remains at least 25 per cent. of criminals, young in years, in whom the discipline, education and religious instruction, so earnestly given at the various institutions, fail to overcome the native tendencies to crime. A Jesse Pomeroy is a moral imbecile, incapable of profiting by admonition or acting otherwise than as directed by the vicious impulses of his degenerate nature, while an "Oliver Twist," strong in the inherited virtues of a good descent, is able to withstand every temptation, and neutralize every evil influence with which a "Fagan" could environ him.

One other argument in behalf of the neurotic origin of criminality and I shall have done.

It rests upon the established fact that inebriety, insanity and crime bear close relationship to, and, as results of pathological conditions of nerve tissue, are correlatives of each other.

In addition to facts and arguments already given, the following are to my mind conclusive in demonstrating that the condition of the organism influences and determines criminality.

It is a fact that inebriety, insanity and criminality are hereditary, and undergo mutual metamorphoses during stages of transmission.

It is a fact that drunkenness or dipsomania is a physical disease, depending on some molecular change of nerve tissue as the direct effect of alcoholic poisoning, and the "gemmules" of this tissue, when transmitted, become active factors in the formation of character.

Says Dr. Joseph Parrish: "I think there is a predisposition in many men to insanity and in many other men to intoxication from the same cause, just as you and I might be exposed to cold and wet and fatigue, and you may get rheumatism and I may get pleurisy."

Dr. Dodge, late Superintendent of the Binghamton Inebriate Asy-

lum, says: "It is important to keep in view that drunkenness is as often involuntary as voluntary; that the person afflicted with the tendency to it obeys a law of his members more potent than his will."

"The condition of the inebriate is abnormal; he is in a state of unrest throughout the whole system, and the urgency for relief is so great that the will has no power to resist! What is denominated appetite, therefore, is a state of suffering depending upon disease, as is colic or pleurisy, and the craving and demand for relief are beyond the power of the will."

Dr. Rush reports an habitual drunkard, who, when urged to leave off drink, replied: "Were a keg of rum in one corner of a room and were a cannon constantly discharging balls between me and it, I could not refrain from passing before that cannon in order to get rum."

McNeish, in his Anatomy of Drunkenness, cites a man, to whom a friend painted "the distresses of his family, the loss of his business and character, and the ruin of his health;" and from whom he received the admission that all was, alas! too true; but, said he, "I can no longer resist temptation; if a bottle of brandy stood at one hand and the pit of hell yawned at the other, and I were conscious that I would be pushed in as sure as I took one glass, I could not refrain."

Prof. Mussey, of Cincinnati, cites a tippler, who was placed in the almshouse and denied all alcoholic drinks, which he tried to secure by many devices, but in vain; till one day he deliberately placed one hand on a block and with an axe struck it off with a single blow, and with the bleeding, mutilated arm uplifted, he ran to the house crying for rum because his hand was off; it was brought and he first plunged the bleeding member into the bowl, then drinking from it freely, exclaimed, "Now I am satisfied."

Certainly this is evidence of will paralysis, or at least of an impulse more powerful than will, and I therefore accept as an established fact that inebriety results from morbid physical conditions which determine abnormal appetites too potent to be controlled by a will which is in a state of partial or complete paralysis. This condition furnishes a numerous progeny of criminals, as is attested by statistics from nearly every civilized nation, being at least as high as 75 per cent. of the total number who take rank under this head. Dr. Elisha Harris places it as high as 85 per cent., and says: "The most mournful fact that humanity could present was presented by the development that this condition of criminality and drunkenness was almost universally an inheritance." If, then, inebriety is a physical disease, causing such a large proportion of criminal acts, are we not authorized to affirm that the acts perpetrated are but peculiar expressions of the physical vice? It is an admitted fact that inebriety in the parent predetermines insanity in the offspring.

Lord Shaftesbury, chairman of the English Committee on Lunacy, reported that six out of ten of the insane became so through the direct or indirect result of alcohol.

The late Dr. Howe, of Massachusetts, found that out of 300 idiots, 145 descended from intemperate parents. While Dr. Maudsley affirms that, next to inheritance, inebriety is the most potent factor in the production of insanity.

Again it is generally known and admitted that insanity predisposes

to crime, and it is also known that physical conditions largely preponderate in the causation of insanity; and since inebriety and insanity are, either directly or through inheritance, the controlling elements in producing criminality, the conclusion is, to me, irresistible, that a mutual relation, of a physical character, is established among the three. It has been my endeavor to show the existence in men of an actual and potential inequality depending on molecular differences of nerve structure which is handed down from parent to offspring, giving each individual a personal capacity which, though capable of being modified by the acquirements of education and influences of environment, determines with much accuracy the intellectual and moral character which is to be.

I have noted the inheritance of individual peculiarities, whether perceptional, ideational, emotional or volitional; and have also cited examples illustrative of the heredity of morbid conditions, and demonstrated the mutability and interchangeableness of pathological states. It has been shown that nerve energy only exists within the boundaries of nerve structure, and that it varies in expression only when there is a variation in the nerve tissue; this applies to every form of nerve energy, whether it be a simple sensation or the exhibition of thought, reason and will.

The moral sense has also been shown to depend on the physical organism, and the manifestation of its phenomena to be influenced by whatever causes induce change of texture in the supreme centres of emotional life.

Is it not, then, an important question to ask relative to man's acts in life, and does not conviction follow after duly reflecting upon the complex nature of the problem to be solved, and the countless number and variety of elements which, as factors, make up the grand total of human life, that ere judgment is given upon any case of criminality, passion and prejudice should be eliminated and manhood exalted by giving reason empire over emotion; holding steadily and firmly the scales of justice, which, on the one side, hold the act committed, and on the other, the organization which impelled the crime, and only by the proper balancing of which can right be vindicated or justice measured to man.

Criminals belong to us as a legitimate inheritance, and are exponents of our civilization; their crimes, like insanity, varying and assuming different forms under different stages of social evolution.

The doctrine that crime can be diminished through fear of punishment is erroneous, as criminal statistics abundantly demonstrate. Were crime the result of personal spontaneity this might be true, but since it springs from the secret forces of organization, is but a symptom of moral alienation resulting from an inherited vice of character, over the origin of which the possessor had no control, how can he, in the name of common sense, do differently than he does? Nay, he cannot; his acts are as the "chastity of impotency, or the silence of the mute, a necessity." He who has no moral faculties cannot be held responsible for moral wrong-doing, and he who is morally dead through the vice of an inherited nature is absolutely beyond the jurisprudence of penal retribution.

Can you arrest upon the verge of the precipice the mighty torrent

of Niagara? No: you may, perhaps, far up the river, divert its waters into other channels; but undisturbed, and its flow is ever onward, constantly gathering force and accumulating wrath, until at length, with maddening rage, it plunges over the giddy heights into the seething abyss beneath!

You cannot arrest it unless you can dry up the sources which produce it, and this is beyond human power.

Neither can you arrest the onward course of the criminal, whose crimes represent the final and terrible explosion of accumulated ills in past generations.

To prevent crime, therefore, is impossible, because the sources from which it springs, the streams which feed it, are intimately united with individual life and social progress, and it is as much beyond human power to regulate and adjust individual and social life, as it is to prohibit the clouds from forming and dropping rain upon the earth.

I shall not now discuss the question of treatment best adapted to criminals, but will say only this: that, however small the hope of success may be, it is clearly our duty to endeavor to reform, rather than punish; to educate and elevate, rather than depress and increase the ignorance of the mind. Our efforts will be limited in good results by the individual capacity of each to receive and assimilate mental food, but it is nevertheless our duty to make an earnest, honest trial.

The more youthful, the more impressible the mind and the greater the hope of reward, and with special endeavor should we therefore labor with the young and yield to no discouragement, but press on with earnestness, assiduity and hope, stimulated by the fact that, though the progress be slow and the gain but small, yet they impress favorably the succeeding generation, and, by and by, through the aggregation of many small gains, is built up a perfect individual and society.

From all this I conclude that man, in his acts, is not beyond the realm of law, and that his responsibilities in life are to be measured according to the standard of his personal organization, the perfect knowledge of which gives the key which will unlock and interpret the mysteries of human life and action.

Error: "egotistic," p. 359, twenty-third line, last number, should be: egoistic.

Nicotine.—One of the latest inventions in tobacco manufacture is *nicotine*, which is a highly concentrated extract, usually made from the refuse and sweepings of tobacco factories. It is intensely strong, and is used, it is said, to convert cabbage leaves and such-like vegetables into genuine tobacco leaf. It does not seem to be hailed by chewers and smokers with that unmixed delight that has attended the announcement of some other discoveries. For our own part, we see no reason why artificial tobacco, well impregnated with nicotine, should not be just as good as the natural article; and its general adoption would be a fitting tribute paid to modern science. It is the nicotine that the consumer craves, and this he gets in either case. Not being experienced in the use of the weed, however, perhaps we ought not to be too positive. At any rate, the customs officers of London do not seem favorable to the new invention, having lately stopped an importation of twenty-three gills from Hamburg, and, after subtracting a small quantity for their own use, returned the re-

THE ARREST OF ZYMOTIC DISEASES.

Abstract of Report of the Committee on Hygiene of the Medical Society of the State of New York, June 20th, 1877.

Dr. E. G. Janeway, member of the Board of Health, and Chairman of the County Society Committee on Hygiene, of New York, reported on the efforts now being made by the Board of Health of that city for the suppression of zymotic diseases.

a. **Small-Pox.**—During the twenty-two weeks of this year ending on June 2d there were only ten deaths from small-pox. This includes persons coming to the city with the disease already contracted elsewhere, and dying of it. The method which the Board of Health employs is not, perhaps, known to all, and hence may bear repetition. A corps of twelve physicians, of whom Dr. Taylor is the chief, is detailed to the work of vaccination. At present the Board is using bovine virus entirely. This is collected twice in each week. The vaccination is performed at the rooms set apart for the corps for such as desire it; and circulars are posted in the tenement houses of the city notifying the inmates of the necessity for vaccination, showing statistics on the subject proving the greater liability to death of unvaccinated as compared with the vaccinated, and also the diminished spread of the disease, the risk attending a neglect of it, and that gratuitous vaccination will be performed at the offices of the Board of Health, or that if those desiring it unable to come will send their names and addresses to the Board, the vaccination will be performed at the house. In addition, some of the corps are detailed to vaccinate the children in the public and parochial schools, and the public institutions. The Board of Education, the Commissioners of the Public Charities and Correction, and the principals of the parochial schools, have co-operated to secure the success of this measure. The remainder of the force are assigned to house work. Whenever a case of small-pox is reported or discovered, every possible effort is used to learn the source of contagion, the places visited by the sick after the disease had developed, and those persons who have been exposed by a visit to the invalid. Those in the house and neighborhood, as well as those who have been exposed to the patient in the ways mentioned, and the families of these latter, are, as far as possible, vaccinated. Concealed cases of the disease are the sources from which several others can be traced.

It seems to your Committee, who have thought over the subject carefully, that this plan presents some features more advantageous than those to be obtained by a compulsory law. The latter rouses a much stronger and formed opposition; it secures a single vaccination if the law is adhered to, whilst the plan which is adopted in New York obtains a good many vaccinations. The epidemic in

London at the present time shows that a compulsory law is not all that is needed to prevent small-pox. The plan adopted in New York is to secure all the vaccinations possible continuously, and to hedge in each case of small-pox by vaccinations around it.

b. **Scarlet Fever** produced 517 deaths in the twenty-two weeks, and has proved the most destructive of the zymotic class, as will be seen hereafter—nearly the same as during a similar period of 1874 and 1876, greater than in 1875.

c. **Diphtheria** produced 376 deaths in the same period, a marked decrease as contrasted with the same period of 1874, 1875 or 1876.

d. **Measles.**—The deaths from this disease have numbered 46, nearly the same as in 1875, a great deal less than in 1874 and 1876.

e. **Typhoid Fever** was the cause of 75 deaths, which is less than that occurring in 1874, 1875 and 1876.

From this disease your Committee believes New York to be freer than many of the suburban towns and villages of the State. If the rate mentioned should continue through the year, one death to each 6,000 inhabitants would be the result. Usually in New York, of late years, the deaths from this cause have been less than 300 per annum. In fact, notwithstanding the increase of population, the number of those dying from typhoid fever is less than it was in the years between 1860 and 1870. In tracing the causes of this disease, a number of the cases have been found to originate in the country.

The conditions of life amongst the poorer classes in New York are especially favorable to the spread of contagious diseases. The large number of tenement houses, with the people living in close proximity, tend to the spread of these diseases when developed. In the cramped quarters of the poor it is difficult to secure the isolation of those sick with this class of diseases, and almost as difficult to impress upon the minds of the people living in these houses the advantages to themselves and their neighbors to be secured by this measure.

The Board of Health issues a circular on the precautions necessary, the method of disinfection of the room, clothing, bedding, etc., containing a prohibition for the brothers and sisters of the sick to go to school during the contagious stage of these maladies, which is sent to each family of which a member is reported sick with a disease of this nature. In case of death, the family are required to have a private funeral. The family are told how to disinfect the room, and the disinfection is frequently performed by the employees of the Board.

Where typhoid fever exists, an investigation of its cause is made, with a view to remedying those defects in sewerage, etc., upon which it may depend. The precautions above mentioned, save disinfection, are not applicable to this disease. Diphtheria has also been investigated in the same manner. Not only has the death-rate of the city been low for the zymotic class, contrasted with recent years, but the total deaths have also been less than usual, though by no means to the same extent as is true of the zymotic class. Nearly one-half of the diminution is to be traced to the lessened death-rate from the zymotic class. . . .

f. **Diarrhœal Diseases.**—The Board of Health employed during the heated term a corps of fifty physicians, who were occupied in visiting the tenement houses, looking for cases of diarrhœa, etc., unattend-

ed by physicians, distributing medicines which were furnished gratuitously by some of the druggists of the city, giving counsel to the mothers about the care of infants during the hot weather, and distributing the tickets to such as needed them for a trip on the boat of St. John's Guild. The Board also distributed a circular relating to the hygiene of the young during the hot weather, and another relating to the precautions to be used to prevent sunstroke, and the care necessary after such event. It seems that a great deal of good was accomplished by these measures. It is not possible to compute this in numbers.

The humidity last year was greater than in 1870, and the average temperature was higher in the period considered. For four weeks consecutively the average temperature was above 81°.

The Committee believes that it would be advantageous if each County Society, and if the State Society would influence its members to send returns of births to Boards of Health. That some physicians fail to comply with the law, is certain. The result of this neglect is that the comparative birth and death rates of cities of this, and also of other States, appear badly alongside of foreign statements of the same nature.

For several years past the Board of Health has been pressing the ventilation of the soil-pipe by extension to roof, and also trapping of basins, etc. These measures were opposed very strongly, but we believe that a part of the good result is attributed to this means of preventing the sewer gas from entering living-rooms.

Clean streets are a great *desideratum*. To obtain them, in addition to the use of brooms, etc., it is indispensable to have good pavements. The old cobble-stone pavements are not readily cleaned, allow accumulation of water and organic substances, and, as a result, in the hot summer weather become a source of danger to health. The wooden pavements in New York have proven worse than the cobble-stone, allowing water to collect beneath. We hope to see the day when well-paved and graded streets and gutters will allow them to be kept perfectly clean.

Variola Vaccination.—Dr. W. C. Griffiths, of the Kings County Society Committee, reported:

There are certain simple rules scattered as so many hints through the writings of Jenner and other early writers on this subject, the enforcement of which was deemed essential to the procuring of a pure and reliable lymph for purposes of vaccination. These rules may be summarized thus :

Take vaccine lymph only, from a characteristic, unbroken vesicle, and not later than the eighth day.

It may seem that I give undue prominence to these rules of procedure, inasmuch as to-day the use of animal virus has almost supplanted the product of the "true Jennerian vesicle" in the estimation of the profession and the public. Yet I cannot but believe that for many years to come a great deal of humanized lymph will be used, mostly by practitioners in the rural districts, who cannot readily procure the bovine lymph; and besides, it requires no stretch of the imagination to presume that in course of time a reaction may set in, for some real or fancied cause, against the employment of animal vaccine,

and what is so fashionable now may, in its turn, be superseded by its old rival.

The best reason for an adherence to the rules I have alluded to above, lies in the fact that through neglect to follow them a new chapter has been added to the literature of vaccinia. I allude to vaccinal syphilis, the only disease besides vaccina which is *proved* to have been communicated by vaccination. This complication having been seized upon by the enemies of vaccination, with the result of bringing the practice into disrepute in some quarters, my object here is to avert its possible evils by a strict enforcement of the method prescribed by Jenner, which, properly followed, would absolutely guard against the transmission of any other disease while implanting vaccina. Let us take these rules singly:

1st. "Take vaccine lymph only." Now, what is vaccine lymph? Is it a bloody or purulent material such as many of us have known called by that name, or a profuse serous exudation flowing from an open sore upon a part where some vaccine has lately been implanted? By no means. Vaccine lymph is the colorless, limpid fluid contained in the vesicle before the least sign of inflammatory action has appeared around it. If such a vesicle is punctured carefully through its dome, a portion of the contents thereof will ooze out through the minute opening there made. Great care must be taken not to puncture through the whole depth of the pock and penetrate its floor, else the lymph becomes vitiated by the blood which will surely be mixed with it.

2d. "From a characteristic vesicle." It can scarcely be expected that physicians could watch the daily changes in the external lesion of vaccine, in order to satisfy themselves that the product of any given vesicle would be proper vaccine lymph; but, bearing in mind that this external lesion has a definite mode of evolution, we have a guide as to its true or specious character, in the fact that almost invariably on the seventh or eighth day it is a pearl-colored vesicle nearly a quarter of an inch in diameter and about one-twelfth of an inch in depth, with, at this time, a slight central depression or umbilication, of a somewhat darker color than the periphery of the vesicle. Occasionally a retardation is observed in the first appearance of the papule, doubtless from a late absorption; after that appears the consecutive development of vesicle, areola and crust, which go on in a perfectly regular manner.

3d. "From an unbroken vesicle." The propriety of this rule is obvious. We may have a perfect vaccination, and the local irritation may cause the child, if old enough, to scratch the vesicle, or it may be injured by a careless attendant; in either case the lymph pours out, then there is an exosmosis of serum through the floor of the vesicle, and this, together with the access of air to the part, gives rise in an hour or two to a profuse exudation very similar to the discharge from an acute eczema. Examined microscopically, this exudation is found to be composed of epithelial and pus cells, with a few blood corpuscles, and here and there a small number of the peculiar bodies which are the essential characteristics of vaccine lymph. I have known such a secretion taken on quills and used with the expectation of a good vaccination resulting, but the only outcome was a sore arm, from a wound poisoned with the products of inflammation. If such

a vaccinifer had recently had syphilis, the risk of imparting it to the vaccinê would have been enormous.

4th. "And not later than the eighth day." This point was strenuously insisted upon by Jenner and the earliest vaccinators, because they had demonstrated the clinical fact that late lymph often failed to impart vaccinia. Jenner, in speaking of the secretion from the "grease" or horse-pox which was used to inoculate cows, says, "It is most active at the commencement of the disease, even before it has acquired a pus-like appearance; indeed, I am not confident whether this property in the matter does not entirely cease as soon as it is secreted in the form of pus." On the subject of inoculation with small-pox matter, the same author likewise held that virus taken from a mature pustule could not be depended upon; but that, in order to insure success, the virus must be taken in its early condition of lymph—in short, before the contents of the pock became decidedly purulent. This same rule is applied to vaccine lymph by the author, whose frequent experience was that *early* lymph must be used to be effectual. In practice we know that the lymph which is first secreted in the vesicle makes the most perfect vaccinations; by that I mean the regular evolution of the papule and vesicle, the appearance of the characteristic areola on the ninth day, and the desiccation and separation of the crust with the least possible degree of local disturbance.

On the other hand, in vaccinating with late lymph, failure is as common as success, and when such a vaccination takes, it is more likely to be accomplished by violent manifestations at the points of insertion of the virus. It has been the habit with many vaccinators to take virus from the vesicles when they are full and plump, on the ninth or tenth day. This waiting for quantity, however, is invariably at the sacrifice of quality in the product. . . .

Sanitary Inspection of Schools was the subject of a report by Dr. Wm. C. Wey, of Elmira, in which he made reference to the general advance of sanitary science as applied to household comfort and security, and its neglect as regards the public schools. The dependence of the physiological conditions of juvenile life upon sanitary precautions was noticed, in connection with the collection of young children in crowded rooms and buildings, and the spread of contagious diseases, particularly of whooping-cough, scarlet fever and diphtheria, from too early return to school in the course of convalescence. Attendance at school of children in the catarrhal stage of measles was mentioned as productive of wide-spread disease. The practice of introducing youth to the primary departments in advance of the legal school age, by the cunning and connivance of parents and older brothers and sisters, was condemned, as well as the admission of the unclean, and such as labor under repulsive infirmities and deformities.

The importance of sanitary inspection applies to sites for schools before the erection of buildings, to school architecture, including means of drainage, heating, ventilation, water supply, cubic space, floor space, the direction and quantity of light, seating capacity, the location and construction of urinals, privies and water-closets, the play-rooms, play-grounds, games and amusements of children, and

the classification of pupils on a basis of health, perfection and development, with constant medical surveillance.

The extent and fatality of preventable disease as a result of school communication is appalling, and the power of the State has been invoked in one direction only to check the consequences of pestilence through the medium of human contact in connection with the scheme of education.

In April, 1860, "An Act to Encourage and Provide for a General Vaccination in the State" was passed, which secured for the admission to schools of children protected by vaccination, and the rejection of such as failed to comply with the provisions of the law in this respect.

This law failed generally to be observed by school authorities throughout the State; indeed, it is believed, with a single exception, it remained a dead letter upon the statute book. In January, 1872, the Board of Education of the city of Elmira appointed a competent physician, under the terms of the law, to examine the several departments of the schools, and exclude from them such pupils as could not furnish evidence of successful vaccination. The powers of the physician were ample, and in a few days he had so carefully performed his work, that vaccinated children only, and a few who showed signs of having passed through small-pox, remained in the schools.

Sanitary inspection has since been maintained in the public schools of Elmira, and frequent visits have been made by a judicious physician, who, in addition to insisting upon vaccination as essential to admission, has jurisdiction over all forms of contagious disease, personal uncleanness, offensive deformities and infirmities, the regulation of cubic space, floor space, and the heating and ventilation of rooms: in a word, the whole domain of medical police, as applied to schools, is under his wise control and management.

A striking fact in connection with the law in respect to vaccination refers to the desire expressed by parents to give children the protection afforded by that simple operation as a means of entering school, and not on account of the defense it affords against disease. A demand for the vaccination of children of suitable age occurs just before the opening of each school term, and physicians understand the significance of the operation in the light of a purpose to commence the educational course, and not to obtain the intrinsic merit of the procedure. Thus, indirectly, the advantages of vaccination are conferred as an ulterior measure, in obedience to the demands of a specific law on the subject. The necessity for the establishment of a State Board of Health is rendered more emphatic by this exhibition of sinister parental design.

The paper concluded as follows: "In the course of a 'Hearing on the Appointment of a Medical Inspector for the Public Schools,' before the Committee on Rules and Regulations of the Board of Public Instruction, in the city of Boston, on the 23d of November, 1876, in which several distinguished medical and other gentlemen participated, Dr. D. F. Lincoln made this statement: 'Suitable provision of this sort,' (medical inspection), 'has not as yet been made either in Germany, England or America. Paris provides it for her primary schools, the city of Elmira, N. Y., has such a medical officer, but, with these exceptions, there is almost nothing of the kind established.'"

THE CAUSES OF DISEASE IN COUNTRY HOMES.

By W. R. Bartlett, M.D., New Haven, Conn.

These causes of diseases may be divided into two great classes: those due to habitations and their surroundings, those due to method of life. By country homes are meant those outside of, and removed from, large towns, in places remote from the influences of overcrowding and the atmospheric contaminations due to such causes, as well as the débris produced by large bodies of people. There are two classes of these homes: First. Those which stand alone and separate from other abodes; Second, Those which are more or less connected with others in towns of small size. There are no more suggestive thoughts than such as are connected with these abodes, and particularly those of the first class. They are the peculiar way-marks of history; these old houses are to our social life what the broken temples of Italy are to art, what the geologic rocks and strata are to the history of the earth. One can read in them the successive eras and periods of that "struggle for life" through which the inhabitants of the various sections of our country have gone. The early progress of our social evolution can be traced as plainly as any geologic record—at the outset in the scattered heaps of stones or mounds of earth, and a little later in the huge remnants of old chimney stacks, and still later in the broken frame-work, or again, further on, in the lonely, untenanted old house, tottering and ready to fall; or each period is illustrated in some single old manor house, still inhabited, which has stood strong against the ravages of the years. Here dwelt our fathers in their stern simplicity, and here abide their children now, in the abodes of a more advanced and complicated method of life, and their history as related to health may be stated concisely as follows: The early homes were primitive, consequently they suffered from the absence of necessary sanitary conditions. The homes of to-day, on the other hand, suffer in a twofold way—on the one side from the same absence of sanitary requisites, and on the other from the improper adaptation of the comforts of a modern civilization. I propose to take up and consider the natural and artificial causes of disease in the country in the following order: those that arise in air and water, those that are due to food and clothing, to habitations and to occupation.

(1.) **Air.**—The atmosphere, the world over, has essentially the same constituents, but it varies in different localities in meteorological conditions; local causes also introduce certain extraneous matters. It is these two conditions which exercise an influence upon public health. In many localities the variation in the meteorological conditions of the atmosphere are comparatively large and rapid. These atmospheric elements exert an influence varying according to situation and ex-

posure, or proximity to the Gulf Stream and sea-coast. For instance, what along the coast in winter is a fall of rain, a few miles back turns to a fall of snow which remains more or less constant. A wind which, upon a high and exposed situation, pursues a direct and steady sweeping current, when it reaches a locality circumscribed by hills whirls and eddies around in irregular waves and with broken force. On the sea-coast the atmosphere may be loaded with moisture while inland it is dry. Any one who has happened to ride in the country some time just at dusk, cannot have failed to note the diverse qualities of the air through which he passes. If, for instance, he descends abruptly from moderately high ground, and travels along the lower meadow lands, through which, it may be, runs a small stream—conditions constantly met with in many parts of the country—he will at once perceive a peculiar chill in the air and a heaviness which penetrates to the skin, so sudden is the change. These conditions must of course exercise an influence upon the health of those who are subjected to them. They may be compared to certain kinds of clothing which vary in texture and thickness, and so in the sensations which they produce. These strata of the air envelop the body, and cause a sense of warmth or a chill, an enlivening or depressing influence, according as they are cold or dry, or warm and moist. Of those diseases which are due in part to the effects of the natural conditions of the atmosphere, consumption is to be particularly named; this is caused by the sudden and large variations which have been named, and without doubt it would be found, upon investigation, that the low grounds which have been alluded to predispose to the disease. It also occurs to a greater extent upon the sea-coast, and in localities situated between adjoining hills. So, too, catarrhal and bronchial diseases and rheumatism, and also malarial and typhoid diseases, are produced by these circumscribed localities. Pneumonia is another disease especially to be noted as due to atmospheric causes, and it sometimes sweeps as an epidemic over a large area of country. Mr. Haiviland, a recent English writer, states that valleys shut in with stagnant air and retentive soil productive of humidity, predispose to rheumatism, and its frequent concomitant, heart disease, and the more so when the population are ill-clad and exposed to the weather. Then there are other elements which pervade the air as poisons and sweep over it with varying degrees of virulence, and are made manifest in epidemics of diphtheria, influenzas and eruptive diseases, and in that hitherto insidious and unexplainable influence named malaria, which has been for the last few years gradually working its way over sections where it never appeared before. The above atmospheric causes of disease are for the most part natural and unavoidable, and must be guarded against by proper attention to exposure and protection of the body by proper clothing. We now come to removable causes of disease, which are introduced into the atmosphere by local causes and the habits of mankind. It is to this class that hygiene especially directs its efforts, but as they come more directly under the head of habitations they will be considered there.

(2.) **Water.**—Closely allied to the air is another natural condition and necessity, which exercises even a more potent influence upon the condition of health, viz.: water. This, again, is a constant com-

bination, but, like the air, admits into its combination even a greater amount of foreign and deleterious matter, as well as that which is remedial in its effects. Most waters are comparatively free from mineral matters; but there are here and there springs containing iron, magnesium and sulphur, and the various salts of potash or soda, which have a local or more wide-spread medicinal celebrity; and although any sample of water would probably disclose a minute amount of mineral matter upon analysis, yet as a rule it does not exist in sufficient quantity to produce injury to health. Almost all waters contain the chlorides, or lime in minute quantities. It is the organic and excrementitious substances which enter into it in solution that produce the mischief. These arise from two causes: decaying vegetable matters from vegetation which has flourished in lakes and streams, and the contaminations of water by local and artificial conditions, such as drains, privies, farm-yards, cess-pools, manufactories, etc. Nowhere is there more neglect shown upon this important point than in the country. Go from farm-house to farm-house, and I venture to assert that in ninety per cent. the sanitarian will find some neglect in this matter of water-supply, either small or great. A man, for instance, digs a well in close proximity to his house; at the same time he locates his drain from the sink and places the outlet within a few feet of the well, so that a mere layer of soil separates the one from the other; the consequence is, that while the insoluble matters may be filtered out, the far more dangerous soluble, impalpable matters are transmitted to the drinking water, to produce, if no worse, a slow and chronic poisonous influence upon those who partake of it. Instances have been mentioned, strange to say, in which a direct communication has been found to exist between the well and sink drain, and that, too, with the knowledge of the parties in interest. Another method of pollution by slops is the practice of throwing them upon the ground near the well, when in course of time they are absorbed into its contents. Again, the water may be taken from a spring at a distance from the dwelling, and the owner congratulates himself upon his superior supply of pure spring water; but if an examination were to be made of the source of supply, the chances are that it would be found to be in a neglected condition, partially filled with decaying wood or leaves and its bottom covered with finely pulverized decomposed vegetable matter. Or he may take his water from a cistern fed from the roof, a practice which should be avoided if possible. If this is not properly ventilated it becomes foul from neglect, the water acquires a foul odor and its use is injurious to the health.

Again, the farm-yard is often located within a few rods of the well; the consequence is, that a similar contamination takes place as in the case of the drain, and after a rain, when the soil becomes saturated with these matters, they are taken up by the underground water-passages and transmitted to the well; often the water is discolored, and has the taste and smell of the barn-yard. The same pollution may occur by reason of the improper location of the privy, though I believe that it does not occur as often as in the case of the others, for sanitary work usually begins here, and even the mind uninstructed in sanitary matters recognizes in a measure the dangerous character of human excrements, while it fails to see the danger which lies in the

emanations from barn-yards and decaying vegetable matters, from a belief that Nature is competent of herself to dispose of them.

It is not necessary to mention in detail the diseases which arise from impure drinking water. Typhoid fever is one of the most important, and every country physician can call to mind cases in which he has traced the disease to one of these sources of water-pollution. But there are certain obscure cases of disease from this cause which are often overlooked—cases of marasmus, so to speak, in which there is no well-defined malady, but a train of irregular symptoms, one or more in a family being affected; there is a general feeling of *malaise*, loss of appetite and weight, alternations of diarrhœa with periods of regularity, and so on. These symptoms cannot be accounted for on any ordinary principles of disease, but many times they are due to a chronic poisoning from impure drinking water. Ask one of the family if the water is good and the reply will be, "Oh, yes, doctor, we have the best well in the neighborhood," and they will show a specimen. It may be perfectly clear and tasteless, and apparently pure; but an examination of the sink drain—one of the other methods of well pollution—will disclose them in close contiguity, and evidently discharging a subtle poison into the water. The important fact that apparent purity is not a safe guide in estimating the purity of water is not generally known. But it is true that analysis even often fails to detect the element which produces disease, when it has been established beyond a doubt that it does exist in the water; the only safe criterion, then, is absolute removal of the cause.

(3.) **Food and Clothing.**—"Give me an old-fashioned country dinner," sighs a well-fed man of the world, tired of and satiated with the delights of artificial cookery; and indeed there is nothing better calculated to appease the appetite and nourish the system than such a repast properly prepared and cooked; but unfortunately our cookery is not all of this high character, and I am compelled to go even farther, and say that country cookery, as a whole, is behind the age, and in its preparation advantage is not taken of the knowledge which science so readily affords. All the requisites for good food are met with in the products of our country homes, but how sadly are they misused. Take, for instance, the cooking of fresh meat. In the great majority of cases it is put into the frying pan with a little fat, and then subjected to a scorching or frying process at an intense degree of heat, which soon deprives it of all its juicy elements, and it goes upon the table dry and hardened and difficult of mastication; and at last, when it does enter the stomach, and the process of digestion is accomplished after much labor and exhaustion of nerve force, it affords but a tithe of the nutriment which it originally possessed, and which proper cooking would have developed and saved. Take, again, the article denominated pie. I shall not attempt to detail the process by which flour and fat are mingled together and subjected to the baking to bring forth that indigestible compound known as pie-crust; but it is safe to say that it is responsible for a large share of the adult dyspeptics and pale, sickly children we are constantly meeting with in the country, the chief delight of this latter class being to invade the pantry and feast upon a huge slice of this compound, until the stomach is gorged to repletion, and digestion weakened and

exhausted. There are few housewives who know how to make good bread. It can be made, all the elements are at hand, but, either through ignorance or carelessness, a large proportion of it is heavy and indigestible, and what is really one of the most important and nourishing articles of food greatly impaired in its usefulness and even made the vehicle of harm to the system.

So I might go on and mention other articles and methods of badly cooked food—as, for instance, the boiling of potatoes, which, improperly done, brings to the table hard, water-sogged masses, instead of a delicate, feathery, nutritious article of diet. The whole matter may be summed up as follows: too much haste in compounding and cooking is allowed—this partly from multiplicity of duties and partly from carelessness. But, above all, there is a lamentable want of knowledge on the part of the wife and mother, of those principles which should guide her in the preparation of the daily food of the family. It is not chimerical to say, that the housewife should know the general divisions into which food is classed, and what elements each class tends to build up. She should know theoretically what many have found practically, that half-boiled potatoes cannot readily undergo solution in the gastric juice, and that pie-crust reeking with fat cannot be absorbed into a healthy system without poisoning the blood, and that it produces a nauseous emulsion in the stomach, which can never be assimilated into healthy fat and tissue. Did she know these simple truths, she would take a maternal interest in preparing such articles of diet for her children as they needed, and would point to her rosy-cheeked, well-developed offspring, as the results of her labor.

Passing to the consideration of clothing, there are one or two points where our country residents display a degree of carelessness which cannot be otherwise than injurious, although, as a rule, they are sufficiently well clothed.

One point is the neglect to wear proper clothing next to the skin, and especially in summer. It is a common practice among farmers to dispense entirely with the wrapper or undershirt during the summer, and wear only an ordinary cotton shirt next to the skin. Such a practice is dangerous, for when work is stopped, then there is a sudden cooling of the skin and lowering of the temperature, and a consequent liability to the induction of disease. Rheumatism, stiff-joints and kidney-disease are all produced by this sudden suppression of perspiration and lowered temperature of the body. Now, a flannel undershirt of proper thickness, or simply a flannel shirt, worn during the summer, would lessen the danger by graduating the conduction of heat. Again, mothers are apt to forget the delicate structure of their infants, and neglect to give proper attention to their clothing. In summer the dress is too light, thus they are exposed to those atmospheric influences which produce cholera infantum and kindred ailments; while in winter, from the same cause, they are made liable to pneumonia and bronchial diseases.

(4.) **Habitations.**—This is an important point, and one in which there is room for and need of much improvement. What, then, are the considerations which influence a man for the most part when he builds a house in the country? If he be a new-comer he reasons substantially in this way: I must choose a pleasant, healthful

location; it must be convenient of access and near my farm or place of business; or, if it be a pleasure house, near the means of communication with other places. If he is an old resident about to construct a new house, he very likely demolishes the old house and builds upon exactly the same spot; or, if he selects a new location, he reasons generally like the former. In other words, both are guided in their selection for the most part by the considerations of eligibility, economy or beauty of construction, and least by the apparent minor conditions which are to afford the household health. He neglects in the internal arrangement of the house to provide the best means for warming and ventilation, and the proper discharge of the sewage. And in the arrangement of his outbuildings he will very likely counteract in the most systematic manner the benefits of his naturally good surroundings. He will locate his barn within a few rods of the house, in order that it may be convenient, and lay out his barn-yard upon the side facing the house; or he will dig his well in close proximity to his house, and at the same time make the outlet of his sink drain discharge within a few feet of it, or his privy will be located within a few feet of the doorway; it will have simply a vault as a receptacle, which is not often cleaned or disinfected. Again, his cellar may be dug in springy ground, from which water and dampness are constantly exuding, to rise and chill the rooms above. This matter of damp cellars is one of great importance, from the frequency of their occurrence. It is not uncommon even to find cellars in which water is constantly standing, often mixed with decaying vegetable matters and the filth which has gradually accumulated there through neglect and carelessness. The writer has in mind such a home, in which one of the family was taken down with typhoid fever and died. A short time after another was also attacked with the disease. That was a time when physicians were not as alert to discover sanitary defects in the household as they now are, so it went on until the third member of the family was attacked; then diligent search was made for the cause, when it was found that the cellar bottom was constantly covered with water mingled with decaying vegetable substances.

This is no isolated case, but can be verified by the testimony of many who read this paper. In such a way an otherwise fair home is surrounded by a cordon of disease-producers, while the owner flatters himself upon his desirable and healthy location. The question now recurs, How should a man reason in the construction of a home in the country? Something like this: I am about to construct a house which is to be the home of my family, consequently I must consider, first and above all, how best to adapt it to the health and comfort of its occupants. I must realize that the causes of disease to which we shall be subjected are many of them to be of our own making; and if I construct my home so as to avoid them at the outset, I shall be teaching them a lesson and inaugurate a course of action which they will naturally learn to follow. The man who reasons thus will reason simply and intelligently, and his home will be a model worthy of imitation. It is no difficult matter to construct a home in this manner. No one rule can be laid down for all cases; but if the importance of building upon sanitary principles is once realized, there is no place where it can be more easily and better done than in the country. The

following are the leading points to be considered, a part of which are derived from an article upon Disposal of Sewage, by C. W. Folsom, M.D., in Massachusetts Board of Health Report for 1876. If the soil is damp it should be well drained. In the matter of damp cellars, they should be well cemented, or sub-cellars only should be constructed, three or four feet deep, thoroughly cemented and ventilated. All outbuildings should be located at a safe distance from the house. The house should be warmed throughout, if possible, and all rooms should be thoroughly ventilated. Slop water should be disposed of in such a way that it cannot contaminate the air near dwelling houses. The best way is to deposit it upon the surface of the ground, not near the dwelling, by means of suitable discharge pipes. All tanks, cess-pools, reservoirs, etc., for storing liquid or solid refuse, should be looked upon as likely to cause serious trouble. If they are used they should be made tight and frequently emptied. Water-closets should be used if possible; if not, there should be a frequent disinfection with dry earth, prompt and complete removal of all excrement.

The line of thought has thus far been directed to the homes of the well-to-do and industrious part of the community. But there is another class in the country—namely, the poorer and impoverished class—to whom a special consideration is due. In every town and hamlet they are to be found, and usually congregated together in one locality. Of all poor people, they are the poorest. Seemingly without energy or decision of character, they go on through life surrounded by the means of comfort and a livelihood, but yet are content with a bare existence. Most of them have intermarried into the same class, and have thus produced a numerous offspring, possessing the same qualities of mind and character; and so the succession is kept up from generation to generation, and the passer-by of twenty years ago, should he revisit the same locality, would see the identical worn and dilapidated houses that met his gaze before. These people are many of them well-meaning, some of them industrious, but it is no misrepresentation to say, that among them are found the open vices of our country homes, for the most part. It is common among these families to find one or more of them the victims of their own or their parents' vicious habits. It may be phthisis, or epilepsy, or idiocy, which they are afflicted with, but the cause may usually be traced to their immoral habits, or to intemperance and irregularity of life. Much is due to intemperance, for this is their special vice; they are the village rumsellers' main support—for among the better class this vice is comparatively little practiced. Almost all the male members of this community are habitual drinkers, and many of the female portion also; and when they reach middle life are more or less broken down by the effects of this habit, while the children follow in the same course at a slower pace. The amelioration of this class is a problem for the philanthropist, as well as the physician, and it is a difficult one, too; but a united action on the part of the profession, backed by the better part of the community, can do much toward their elevation, and particularly in the matter of intemperance. The closure of the low groggeries from which they obtain their poison would be a beginning in the right direction, which would lead to a higher moral standard, and thus toward permanent results. Systematic

effort applied to the elevation of this class of people, which familiarity has made contemptible, would materially lessen the number of those supported at public expense in jails, hospitals and reformatory institutions generally.

(5.) **Occupation.**—Most of the inhabitants of our country homes are engaged in the occupation of farming, though, of course, manufacturing is carried on to some extent; but most of these are located in the larger towns, and do not come within the scope of this paper. The causes of disease, then, which fall to our consideration as due to occupation, are those pertaining to farm life, as relates to the male portion of the community, and to domestic or indoor life, as relates to the female sex. The question, then, at once arises, Is farming healthful? It would seem to be the height of folly to attempt to disprove, or even criticise, this almost universally accepted belief. Let it be granted that the principle is true, yet there remain certain aspects of it through which the lover of honest criticism can easily penetrate. Farm life possesses three beneficial elements: (*a*) constant physical development, (*b*) abundance of pure air, (*c*) absence of excess and simplicity of life. Against this must be set three elements of danger: (*a*) constant physical and mental strain, (*b*) irregularity of life, (*c*) exposure to the inclemency of the weather. That it is possible for the farmer to so conduct his affairs as in a great measure to reap these benefits, and not expose himself to the dangers, cannot be denied; but practically he does not often do so. A sketch of a farmer's life will make this apparent. A young farmer sets out in life, ambitious of a competency. He rises early, and goes at once to his toil. After a hasty breakfast, the regular labor of the day is begun, and continued till noon, when he gives himself a short dinner hour, then resumes his labor and continues it through the day, till, worn and weary, he seeks his home at night. Completely exhausted, too tired for recreation, he is obliged to spend his evening in quiet to recuperate himself for his next day's work. Often he rises in the night-time and takes a long journey to the neighboring market, exposing himself to the chilly night air, and careless as to his clothing; and if he returns before the day is done, takes up some unfinished task and continues his labors again till night, devoting but scant time to rest and food. This course of life is continued day after day, and year by year. In the meantime he is economical, and laying up a competency; but is steadily breaking down his physical health, as his weary constitution and stiff joints so often testify.

This surely is a picture of excess, and one in which the good elements of farm life are sadly perverted and misused. It is not only a physical wear and tear, but what is more, the mind often sympathizes and becomes broken or enfeebled in its operations. The records of the Connecticut Hospital for the Insane, for instance, show this with startling emphasis. An inspection of them shows, that of the whole number of males admitted from the beginning, of the various occupations 170 are farmers, the total number being 773. We pass now to speak of farmers' wives. The same records show that, of the whole number of females admitted from the beginning, which is 558, 215 are housewives, and of course for the most part the wives of farmers. When one considers the method of life of this class of persons, it does not seem so surprising. Take for an illustration a young farmer's

wife, the companion of him who has served as our previous example. She may not be very strong physically at the outset; but be that as it may, she enters into all the plans of her husband with alacrity, she assumes the entire control of the house and does her own work; this is well enough at the outset; but soon she enters upon the maternal state, and a young and increasing family becomes a part of her care, and draws upon her in a twofold way; she bears not only the physical strain of child-bearing, but also continues to perform her own household duties; her husband's business still increases, adding more yet to her already multiplied duties; but still she presses on, and so continues, till her pale, anxious face and weary step tell of a constitution broken at once mentally and physically. This is no imaginary picture, but one enacted continually among our farming people today. The average farmer's wife is one of the most patient and overworked women of the time. One has only to attend one of our village churches on some Sunday in the summer to obtain a critical view of our overtaxed farmers and their wives; a glance over such an assembly reveals a set of faces whose very lineaments are drawn and wrinkled from overwork; they tell of lives of constant, unremitted toil, the signs of which even a Sabbath day's rest cannot at all efface. It may not be necessary to speak of the occupation of the children, yet there are one or two points not to be overlooked. It has passed into a truism, that farm life is the right kind of life for a pale, sickly boy, but true as this may be in a general sense, there are yet many exceptions which should not be overlooked. Take, for instance, the younger child of this pair above described. He is, perhaps, a weak, frail child, and when he reaches the age of six or eight years he begins to labor on the farm, doing such light work as he is supposed to be able to bear. As he grows older his tasks increase, at the same time he is pursuing his course of study at the district school; but gradually he acquires the same habits as his father, and his growing body is subjected to a strain which it is ill able to bear, and he grows up weak in body and mind, an old man at twenty, or it may be dies of phthisis engaged in the very occupation which popular opinion calls the most healthful. It would not have been so in his case had his life been properly guarded, and he would have developed into a healthy manhood, had his labors been properly adjusted to his strength and his life been conducted upon hygienic principles. Parents, in choosing a course of life for their children, should consider whether the child can bear the strain of farm life, and whether it coincides with his mental organization, and should so shape his course that he shall leave the farm at a proper age for some other occupation if his constitution so demands, and then the sickly young boy often develops in strength and bodily health. The cry so often uttered, "Keep the boys on the farm," is a senseless one, indiscriminately applied, and cruel in its working; for the boy who is not adapted to that occupation should not be subjected to it, any more than the thin-skinned, delicate-limbed horse should be harnessed down to the plow.

The salient causes of disease in our country homes have thus been passed in review, in the hope that the attention of the people will be thus in a measure attracted to matters of such vital interest to them and their children.

STREET PAVEMENTS.

In the long line of modern improvements, the subject of improved pavements comes to the front of late years with very imperative demands upon engineers and laymen. In the July number of THE SANITARIAN was published an article by Prof. Haupt, of the University of Pennsylvania, on this subject, which deserves some comment.

Prof. Haupt discusses only the surface-covering of a pavement, and says the requirements of the surface are, that it shall be: (1) firm and elastic; (2) noiseless, clean and dry; (3) smooth, yet rough; (4) permanent, yet easily removable; (5) light, yet heavy (sic); (6) it should be durable, producing a minimum amount of wear and tear; (7) it must also be cheap and readily obtainable, and (8) non-combustible; and then says: "The impossibility of selecting any one of the available materials, wood, stone, brick, cement, iron or asphalt, which will fulfill all the above conditions, is apparent." He says wood should be rejected from sanitary considerations alone, because it contains within itself nitrogenous principles, elements of decay and putrefaction. He rejects iron because of expense, noise and insufficient foothold; brick, because it is too brittle for ordinary travel; and of four kinds of stone pavement, he rejects those made of cobbles, boulders and spalls, and says it is difficult to decide which of the three is most injurious.

Prof. Haupt rejects bitumen also, either in the form of asphaltum or mineral tar, but admits

"*When used, however, with sand and cement, it forms an excellent surface, so far as smoothness and durability are concerned.*"

Yet, after making this explicit admission, Prof. Haupt stultifies himself by saying: "We find ourselves, therefore, restricted to the use of stone or cement as fulfilling most nearly the requirements of a good road-covering," and then recommends a stone block of a regular geometrical form, or of cement, as "an artificial monolith." The Professor then avows his purpose to be, to review and emphasize the conclusions of a report made by eight eminent engineers, appointed as a committee by the Franklin Institute, June 26th, 1843, to report on "The best modes of paving highways."

We have to say, with all due respect for Prof. Haupt, and the eight eminent engineers who reported on pavement in 1843, that they are thirty-four years behind the present time.

Ten years ago the engineers of Prospect Park, in the city of Brooklyn, had the sagacity to see that there might be a serviceable covering for walks formed of bitumen, sand and gravel, and they recommended it to their Commissioners, who adopted it and covered miles of walks with it, greatly to the comfort of pedestrians. The same engineers also recommended that it should be tested for a roadway pavement,

and in October, 1867, a piece of roadway was paved in Prospect Park, of which the following statement was made, June 29th, 1877, by J. Y. Culyer, Esq., Chief Engineer and Superintendent of Prospect Park:

"It was laid nearly ten years ago in one of the most traveled portions of the park. It was laid under ordinary circumstances and has given satisfaction in all respects, having been subjected throughout that period to continual travel usual to the park, and in the earlier years of the work to heavy traffic by the construction force working in the neighborhood.

"It has never cost the Commission anything for maintenance or repairs, and in my judgment is as good as it was nine years ago."

This was the beginning of bituminous concrete pavements for roadways in the United States. Like many new lines of business, it was rushed upon by scores of men who knew nothing about it, who made mistakes and failures, and brought great discredit upon this class of pavements. In fact, it was not for awhile a very safe business even for those who had the largest experience. Materials were found to be not always uniform, and results were not always uniform; but by degrees the difficulties were overcome, and now we venture to say that already the bituminous concrete pavements of this country surpass the celebrated asphalt pavements of Paris and London in several important particulars.

1st. In cost. They can be made here at less than half the cost of the Neufchatel.

2d. In cost of maintenance. It costs the city of Paris twenty-two cents gold per meter per annum for repairs—equal to about twenty cents per yard. The city of Brooklyn has bituminous concrete streets which have not had a dollar spent upon them in seven years; and Bedford Avenue, over which passes an immense business traffic, and almost the entire light driving of the Eastern District, with its 150,000 population, on its way to the park, with 60,000 square yards of pavement, has cost the city for five years less than $3,200 for repairs, or about one cent per square yard per annum.

In and around the city of Brooklyn there are about fourteen miles of these roadway pavements. Three or four years ago several streets in New York were partially paved with what has proved to be a good material. In the city of Washington there are over twenty-five miles of this class of pavements; and although a very considerable portion of this work, having been intrusted under ring rule to ignorant contractors, was bad work, yet, also, there are many miles of these pavements six, five and four years old which are good and have required no repairs. So also in Cleveland and Columbus, Ohio, these pavements have been introduced and are extending.

So that enough of these pavements now exist; and having been subjected in many cases to severe use for five, seven and ten years, we are warranted in applying to them the test of the eight requirements which Prof. Haupt lays down as desirable for a surface-covering, and therefore we ask: Are these pavements

(1) **Firm and Elastic** ?—No stone pavement can possibly have an equal elasticity, and yet they are firm as the solid ground.

(2) **Noiseless,** Clean and Dry.—There is no noise, or very little, made by wheels going over it. The click of the horse's foot is suf-

ficient to warn, but does not deafen. The sanitary value of this quiet quality over any kind of stone pavement is inestimable. Dr. Fordyce Barker, in a letter to the New York *Times* dated November 3d, 1873, writes as follows:

"Very few appreciate the effect of persistent noise on the nervous system. We now see very little of the gentle decline of old age in this city. When our busy men die, they fall, with little or no premonition, like soldiers in the crash of battle. The toughest railway iron is shattered by a sufficient number of comparatively slight blows. It resists without external change, but interiorly its filiform structure gradually becomes granular, and the end of the transition is marked by the blow which fractures the rail. So the strong business man, accustomed to the din of travel and traffic, endures it for a period without evidence of injury, until one day comes when the nervous system, suddenly shattered, announces the close of the business career, and the imminence of dissolution."

Clean.—No pavement can be so easily kept clean if properly cared for. It is made of antiseptic material. It is impervious to water, and hence no filth can soak into it or through it. The droppings of horses and the dust blown on cannot be avoided, but from no other pavement can they be removed so easily. The street cleaning of all stone pavements, as Dr. Fordyce Barker forcibly says, "exposes without removing these *points d'appuis* of disease, a sort of dalliance with death."

Dry.—Every shower washes them clean, and as they absorb no water, they are dry very shortly after the rain is over.

(3) **Smooth, yet Rough.**—These pavements answer these requirements. Being made of gravel and bitumen, the foothold is good. If a stone pavement is made without wide crevices it becomes too slippery for horses. Then the edges of the crevices are always spalling off—enlarging the crevice, until in time the best granite pavement becomes as rough as a cobble pavement.

(4) **Permanent, yet Easily Removable.**—When openings are necessary for water, sewer and gas pipes, the pavement is removed, and the opening is repaired with perfect ease and success.

(5) **Light, yet Heavy.**—The meaning of this requirement is not obvious, but we can conceive of no requirement to which these terms may apply as to stone which does not equally apply to bituminous concrete.

(6) **It should be Durable, producing a Minimum Amount of Wear and Tear.**

(7) **It must also be Cheap and Readily Obtainable.**—The requirements 6 and 7 may be answered together. They both refer to cost and repair. One formidable objection to the use of the Neufchatel and Seyssel pavements in this country is the great first cost and the great cost of repairs—the latter costing an average of twenty cents per square yard in London and Paris. American ingenuity has overcome this obstacle, and not only produces an admirable pavement at half the cost of their European congener, but maintains and keeps them in repair at less than one-fourth of what it costs in Paris and London. Moreover, we know of one company that has patented an admirable expedient, by which any old pave-

ment may be utilized as a foundation, thereby further reducing the cost nearly one-half; so that when this kind of foundation is practicable, the cost is not more than about one-half the cost of a good granite pavement.

The materials are abundant, readily obtainable, and the only limit to their production is the absolute necessity that only men of competent experience and skill should be entrusted with such work, under adequate guarantees.

(8) **Non-combustible.**—Bitumen in any form, when mixed with sand and gravel, is not combustible. The Fire Insurance Companies regard it, as a covering for roofs of houses, equally as safe as slate, and charge precisely the same rates for the two kinds of roofs, other things being equal.

We have shown, we think conclusively, that all the requirements which Prof. Haupt lays down as necessary for a surface-covering are possessed by the bituminous concrete pavements which have been developed in this country during the past ten years. But there are at least two other very important requirements of a good surface covering, not mentioned by Prof. Haupt, which were not much heeded thirty-four years ago, but which now are imperatively called for.

(*a*) That it shall conserve the health of the community, and not do the reverse. It must not be an absorbent of filth and a vaporizer of poisonous miasm. Every stone pavement packed with sand is a sponge that, year by year, accumulates a greater and a still greater stock of filth. Every day and every rain adds to its store; and every sun draws out and spreads the poisonous exhalations on the wings of the wind, to be wafted into our houses, and to be followed by that dread hand that draws away the roses from the cheeks of our little ones, and lays on instead the ashes of death.

Not so with these bituminous pavements. No water and no filth can pass through them. At an expense of probably not to exceed ten dollars a year to each householder on these streets of our cities they can be cleaned every night.

(*b*) The surface-covering should reduce the wear and tear of horses and vehicles.

Hitherto engineers have chiefly been concerned to save wear and tear of roadway. The new demand is for a pavement to save the wear and tear of horses and vehicles. Stone pavements rapidly lame horses and wreck vehicles. The elasticity of the new pavements saves horses, and the smoothness of them would probably add three or four times to the length of wear of city carriages of all kinds. Physicians say that even with the comparatively few miles of these pavements in Brooklyn, the bills for carriage repairs are reduced one-half. The saving that would be effected by their general adoption would be enormous. It has been estimated that the cost of repairing the wear and tear now annually sustained in the city of New York by 80,000 horses and 60,000 vehicles, due to the bad pavements, cannot be less than $3,000,000. This amount is now thrown away.

These economical and sanitary considerations are of such overshadowing importance, that it is astonishing that our usually wide-awake people should regard them with so much indifference.

J. P. C.

Editor's Table.

Brooklyn and Her Precincts.—At the time of our last issue the Health Department of Brooklyn was in process of reorganization. The important office of Sanitary Superintendent has been restored. While we have no reason to consider all the changes which have been made in the subordinates of the department an improvement, there is good ground for believing that the promotion of Dr. Joseph H. Raymond, one of the oldest Sanitary Inspectors in the Department, to the Office of Sanitary Superintendent, will do much towards promoting the efficiency of the Board. Dr. Raymond has for several years been an observer—and for a portion of the time, at least, an actual official reporter—of the accumulated, and *still accumulating*, manure dumps in the "sunken lots" created by the progress of city works in various precincts of the city, particularly in South Brooklyn. These pent-up marshes, ponds and mud-beds are doubtless wisely chosen, *by the dealers in manure*, as places promotive of the decomposition of organic filth; and the public authorities, who, under the influence of ward politicians, have hitherto permitted these manure factories, are equally guilty with those who conduct them, of poisoning the people in the neighborhood, and polluting the soil for generations to come. Nor is this all. The foul stenches of the manure factories are greatly intensified by the sewer gas emanations of Gowanus Canal—*the receptalce of the Bond Street sewer*. Into it is poured the sewage of a large area of the densest portion of the city; and here, in the midst of the foul emanations which poison the air of the region, thousands of workingmen in the coal-yards, barges and lumber-yards have to earn their daily bread. Thousands more have their homes in the immediate vicinity, for the neighborhood is fast filling up, notwithstanding its foulness, because men here find work, and because here houses are cheap at the time of May moving; and many who avail themselves of their cheapness, sadly experience the reason of it on the first setting in of hot weather.

But while Dr. Raymond, as Sanitary Inspector, had his official knowledge for the time limited to a narrowly circumscribed sphere of duty, his lines are now greatly extended. Ere this time—for he has occupied his present important office several weeks of *the* hottest weather, and watched the boundaries of the increased mortality—he has been officially informed of other precincts. Inspectors, whose duty it is, have doubtless called his attention to the old Knickerbocker sewer, with its insufficient flushing, reeking filth throughout its course, and finally belching out its foul load on the mud-flats of Newtown Creek. Worse still is the Union Avenue sewer. "The present discharge is into a small creek," say the Commissioners of City Works. *It is only a foul creek of its own making*—no more nor less than its own contents, the excreta and waste-water of a large and thickly-populated portion of the city into a marshy district surrounded by dwellings, with its mouth covered over by a bridge, over which thousands of persons pass daily without knowing the source of the

soil and air pollution which besets them on every side. Moreover, this foul nuisance is near the centre of a district, a mile square or more in area, in which are situated several slaughter-houses, cow-stables, glue factories, fat dealers and various other manufactories, mostly with open drains and filthy surroundings, polluting the air and soil of not less than forty thousand persons, who about here have their homes. Such are the nuisances of the first magnitude within the precincts of Brooklyn. Many others there are, too numerous to mention: such as the water-logged, filthy soil of the Twelfth Ward, known as Red Hook, and all along the river front for two blocks deep from that region up to Atlantic Ferry. And again from Fulton Ferry to the Navy Yard, and thence from the other side to the junction with the poisoned marshes of the Eastern District, already in part described in conjunction with the Union Avenue sewer. And all over the city, festering old privy-vaults, cesspools and sink-drains, with their loads of filth in store, join hands with the modern "first-class conveniences" for poisoning people by means of wash-stand safety-pans, with their dry traps as open sewer communications with every chamber in the house, cellar water-closets and earthenware house-drains. "Knowledge is power," saith the proverb. If such it proves to be in the inheritance of the present Board of Health of Brooklyn, it will be because it draws a sharp line between that which is good for the health of the people, and that which is ruled in the interest of politics. It is in the power of the Board of Health of Brooklyn to declare anything a nuisance which is dangerous to the health of the people, and to any such declaration the laws of Brooklyn are subservient.

The Sewerage of Atlanta.—A Sanitary Commission, consisting of Drs. J. P. Logan, W. T. Goldsmith, V. H. Taliaferro and Ch. Rauschenberg; and Hon. L. DeGive, Hon. N. J. Hammond, Mr. W. J. Garrett and Mr. John Stevens, after mature investigation, have rendered a report on the various but heterogeneous means by which the health of Atlanta may be protected.*

This Commission was created by the City Council as follows:

"*Resolved*, That a Sanitary Commission be appointed for advisory purposes, to take under consideration the question of drainage, and the disposal of the refuse, especially the excreta, of the city; . . . . that said Commission shall make the most thorough investigation practicable as to the different systems of drainage and disposal of refuse, and report to the General Council, at their earliest convenience, the result of their investigations. The Commission shall perform their duties without compensation, and shall have the authority to invite any person or persons before them for a free and full discussion of this subject."

Under this authority the Commission organized and adopted resolutions for the division of labor, and "to obtain all the information accessible upon the subject of the disposal of refuse, and the plan best adapted to the city of Atlanta."

In virtue of this action, the General Council of Atlanta have obtained a very valuable amount of information at the mere cost of the

* Proceedings and Reports of the Sanitary Commission of the City of Atlanta, Georgia, 1877.

printing; and if the people do not profit by it, it will probably be because the public authorities do not set sufficient value on human life to appreciate the necessity of pecuniary outlay in order to turn this information to account. The Commission seems to have devoted attention almost exclusively to the means of sewage disposal; drainage is treated only incidentally. While it is to be regretted that the members of the Commission have failed to unite upon "the plan best adapted to the city of Atlanta," their work in other respects is to be commended for its sincerity and thoroughness in placing before the Council a knowledge of the various means at their disposal for the accomplishment of the purposes in view. As a rule, the sanitary aspects of civic cleanliness are perfectly consistent with the economic aspects of the question; and, these latter may be safely left to take care of themselves, nothing being truer in this respect than that "Public Health is Public Wealth." Notwithstanding, it is the clear duty of all authorities in the premises to count the costs.

With an apparent comprehension of all the circumstances (not, however, as clearly stated for the benefit of persons not familiar with the situation as they should have been), and a large amount of accumulated experience from other places, the chief strength of the report consists in a contest between two leading spirits, Drs. Rauschenberg and Goldsmith; the other members of the Commission, however, and Mr. McDaniel, City Engineer, being valuable contributors to the information reported upon.

With her present population, and a water-supply equal to double the number (estimating thirty-five gallons a head), and two abundant, swift streams, distant, respectively, six and ten miles from the city, Dr. Rauschenberg advocates thorough sewerage with privy and waste-water connections as *the* means above all others; *using intermediately some of the small streams which take their rise within the precincts of the city as sewerage receptacles*, of which "there are five, at least, which have a good deal of fall, and are generally swift-running; that none of them go dry, even in the most protracted spells of dry weather; and that none of them extend further than from six to ten miles from Atlanta before they reach, respectively, either the South River or Chattahoochee, receiving all along their course new accessions of water from numerous tributaries, and thus, at a very reasonable estimate, doubling their volume of water at least every two miles of their course. These small brooks," Dr. Rauschenberg goes on to say, "are the natural channels which do now, and will, for all time to come, receive and carry off all the rain and waste-water deposited on the surface of the city," etc.

On the other hand, Dr. Goldsmith, while acknowledging the superiority of the water-carriage system, under favorable conditions, with an abundant water-supply, and discharge into the sea, or into a body of running water not less than forty times larger in volume than that of the sewerage, finds these conditions absent in Atlanta: "It is believed that the water-supply is insufficient to serve every other purpose, and to keep the sewers constantly clean. If Atlanta should be thoroughly sewered, over one hundred miles of sewers must be constructed." On the authority of Dr. Corfield, "the liquid filth alone of a town is equal to the water-supply, to say nothing of the

excremental matters. It will be seen, therefore, that until it is demonstrated that *the five rivulets, all rising within the city limits, and flowing not more than a mile and a half from their sources; any of which can be stepped across, and the proposed outfalls of the sewers, into which the sewage must be poured, are forty times greater in volume than the water-supply, the water-closet system cannot receive the endorsement of the Sanitary Commission.*" On this conclusion, Dr. Goldsmith proceeds to consider the sanitary objections to sewers in general, and the advantages of various other means of excrement removal; quoting freely from experimental reports on the displays of various bucket, earth-closet and "odorless" systems, all more or less efficient under stated conditions, but for the most part *dernier* resorts—as a rule, improvements upon, or aids to the old privy vault system, but never commendable in the face of conditions suitable to water-carriage. Sewage rendering, and irrigation, are also considered *pro* and *con*, and intelligently enough to show the common experience—as sanitary measures, doubtful; as expensive measures, certain.

The final action of the Commission consisted in rejecting Dr. Rauschenberg's report, and recommending:

"The use of carts or wagons as the vehicle for the removal, in boxes or barrels, of all human excreta, both solid and liquid, and of all solid foul matters or refuse from the central points of the city, where said foul and refuse matters cannot be, or are not, used for fertilizers in gardens connected with such houses."

For perfecting the details of this recommendation, the Sanitary Commission offer their aid to the Mayor and Common Council, based upon certain conclusions derived from their knowledge of the experience of other cities. The terms of the recommendation suggest an effort to comprehend the system in vogue at Paris. However that may be, if undertaken, in Atlanta, we have no doubt whatever that, notwithstanding the voluntary assistance of the Sanitary Commission, the process (if such it can be called) will prove to be a continuously expensive one, a heavy tax upon both the health and the purse of the community, and in the end an abominable nuisance.

The plan of Dr. Rauschenberg—*conditioned upon the use of brooks, such as he concedes those to be which he advises as open sewers*—would be even worse, because extensive soil-pollution would be inevitable.

If we are not mistaken in the premises, and in what appear to be justifiable inferences, a city of 30,000 inhabitants, three miles in diameter, encircling the top of a hill with a descending grade in all directions, down which live streams flow perennially, *an abundant source of water-supply, and within six miles of a sufficient water-flow to carry off the sewage*, surely possesses superior advantages for a thorough and complete system of water-carriage in all its details. A sewer-main into which may be diverted some, or all—if need be—of the five running streams which now flow down the hill-sides to flush it, may safely be made the common receptacle for even more than the extravagant estimate of 100 miles of sewer-pipe deemed to be necessary for a complete system.

Brooklyn, with an area of eight by five miles, and more than half a million of inhabitants, now has laid less than three hundred miles of sewer-pipe. Her whole extent of streets contemplates, when com-

plete, five hundred miles. But the land-lay for grading in Atlanta presents advantages so infinitely superior to Brooklyn, as to strip the comparison of all fairness of illustration; the advantages are all in favor of Atlanta. And we sincerely trust, for the good of the people, that the General Council of Atlanta will not be misled by the favorable reports of the dernier resorts of old and compact cities in default of timely sanitary engineering, frightened by the array of figures for making alterations and supplementing old and incomplete arrangements; or be prevailed upon to adopt any of the plans comprehended in the vague recommendation of the majority of the Sanitary Commission, based upon proprietary reports and influences, which are useful only in default of conditions favorable to the water-carriage system, which Atlanta in an eminent degree possesses.

The Public Health.

Mortality per 1,000 inhabitants, annually, from all causes and certain special causes.

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,076,925—4 wks. end'g July 21.	1890	2882	34.79	169	1	52	73	23	28	44	9	3	17	1187	285	147
Philadelphia, 850,856—4 wks. end'g July 28.	739	1746	14.91	49	6	23	36	7	8	8	47		4	503	147	47
Brooklyn, 528,000—4 wks. end'g July 28....	849	1266	31.17	22		48	59		7	10	9		13	523	120	30
St. Louis.....																
Chicago, 460,000—4 wks. end'g July 28.....	834	997	28.1	28	4	13	54	17	4	6	16		11	311	47	5
Baltimore, 350,000—4 wks. end'g July 28...	597	841	24.	12	45	26	7		4	53	16		2	292	60	29
Boston, 363,000—4 wks. end'g July 28.....	408	715	25.66	25		17	4		4	9	10			165	97	24
Cincinnati, 265,000—4 weeks end'g July 28.	237	432	20.10	25	2	6	3	1	1	7	6		6	118	44	15
San Francisco, 300,000—month of June....	153	407	16.28	20	2	54	2	1	6	1	16		3	11	43	26
New Orleans.....																
Washington, 160,000—month of June.....	211	89	29.17	9		2	9	3		2	4		4	68	63	20
Pittsburgh, 145,000—month of July.....	224	351	31.47	34	12	7	11	2	4	20	4		4	89	19	15
Newark, 126,000—month of June.....	133	279	12.66	5		15	22		2		1			18	39	10
Providence, 103,000—month of July.....	92	189	22.66	4		9					4		1	62	31	7
Milwaukee, 122,980—month of July.....	144	226	22.05	13	16	8	11		3		1			48	16	6
Rochester, 70,000—month of July.....	58	129	21.71	4		2								29	9	4
Richmond, 75,000—4 wks. end'g July 25...	111	205	35.21	3		2	4	3		3	5			53	19	6
New Haven, 60,000—month of July.....	85	136	27.2	3		2	9	1	1	1				65	14	2
Charleston, 57,000—4 wks. end'g July 28...	58	140	31.													
Toledo, 50,000— month of July.....	24	53	12.72	7		2	3				2			3	8	2
Mobile, 40,000—month of June.....	57	104	30.1	2				3			3			17	7	5
Dayton, 36,000—month of July.....	22	42	14.	2										17	4	
Nashville—2 months end'g July 31.....	93	174	28.74	3		11	4	1	1	6				38	19	5
Wheeling, 28,000—month of July.....	25	46	19.71	1		2								11	2	
Buffalo, 170,000—2 months end'g July 31...	161	338	11.92	24		2			1	2	5	1	1	69	41	16
Knoxville, 13,000—month of July.....	5	13	11.01											3	4	
Paterson, 40,000—2 months end'g July 31..	109	179	26.85	5		6	7		2					9	14	13
Petersburg, 20,000—4 wks. end'g July 28..	34	60	39.	1									1	15	8	1
Selma, 8,000—month of July.....	5	12	18.	1										3	1	
Elmira.....																
Yonkers, 18,000—month of July.....	20	32	21.33	2	1									8	1	2
" " Year end'g June 30.....	149	360	20.	16		21	12	3	3	5	6		9	24	66	43
Memphis, 45,000—2 months end'g July 31..	89	217	28.93	5		2					1		2	43	28	9
Detroit.....																
Syracuse, 60,000—month of June.....	12	56	11.2	2			1		1				1	5	11	4
Erie.....																
Minneapolis, 33,747—month of July.....	31	47	15.5	2			1		1					1	3	2
Montreal, 134,000—month of July.....	385	629	56.32	8	74	29	3	4	8	9	7			165	47	20

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population

Foreign Health Statistics.—United Kingdom of Great Britain, during six weeks ending June 30th, 33,502 births and 20,729 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 12,773. The mortality from all causes was, per 1,000—in London, 20; Edinburgh, 21; Glasgow, 24.66; Dublin, 27.83; Portsmouth, 15.5; Norwich, 20.83; Wolverhampton, 20.83; Sunderland, 23.83; Sheffield, 23.5; Birmingham, 23,33; Bristol, 22.33; Liverpool, 26; Salford, 29.33; Oldham, 30.83; Bradford, 22.66; Leeds, 22; Hull, 19.66; Newcastle-upon-Tyne, 19.33; Leicester, 18.5; Manchester, 27.66; Nottingham, 21.83. Other foreign cities at most recent dates, per 1,000 — Paris, 22; Rome, 19; Vienna, 25; Brussels, 25; Berlin, 37; Hamburg, 29; Calcutta, 24; Bombay, 68; Madras, 120; Amsterdam, 26; Rotterdam, 26; The Hague, 27; Christiana, 21; Breslau, 31; Buda-Pesth, 39; Turin, 32; Alexandria, 52; Copenhagen, 20; Munich, 43; Naples, 29.

Pittsburgh, Aug. 6th:—You committed an error in your last number by stating that our Board of Health consists of "nineteen" members. There are but nine.

Regarding the accuracy of our statistics, the actual figures show ours to be the most complete of any city in the United States—Boston, which claims to be the most accurate, not excepted. Our return of deaths may be said to be complete. No body is permitted to enter any of the cemeteries or burying-grounds in the neighborhood of the city without a permit from this office. Neither is any body permitted to leave the city, by railroad, steamboat, or otherwise, without a permit. Our undertakers have been so frequently *prosecuted* and *heavily fined* in years gone by, that they are all glad to comply with the *law*.

Regarding marriages, births and still-births, we do not pretend that our records are complete, but we do say that they are *more complete* than other cities. We say so for this reason—we register a *larger number of them* in proportion to our estimated population than any other city. I have carefully examined the figures contained in the annual reports of all the cities in the United States, their estimates of population, etc., and know exactly what I am talking about when I repeat the assertion that we register a *larger number* of marriages, births and still-births in proportion to our estimated population than any other city in the United States.

For fear that my language regarding the registration of deaths in this city may not be strong enough, I may say that we have brought the *permit* system to such a state of perfection that everybody understands exactly what to do in case of a death. It is very seldom that an attempt is made to evade the law.

W. Snively, M.D.,
Physician and Registrar.

Stewart's Sewer-Gas Trap.—To the Editor of The Sanitarian: Your reply to "Inquirer" regarding the use of rain-water leader in connection with our Patent Sewer-Gas Trap, to carry off the sewer-gas, in your last number, meets with our approval. An independent pipe leading to roof, or some distance from the house, where the gas can escape without danger to the occupants, is the best way. In new houses provision should be made for carrying up the vent pipe (through a recess in the wall) above the roof. It is only in houses already built, where no such provision is made, that there is any trouble in connecting the vent pipe. Many persons find an easy way of connecting with the rain-water leader, which will answer as a vent, except in the case referred to by you. But permit us to state that we guarantee that one of our traps placed on main drain, between the house connections and sewer, will entirely preclude the possibility of sewer-gas entering the house. So that if all the traps in the house should become empty from evaporation, siphonage, or other causes, or should there be any defective joints, the sewer-gas being shut off at the trap, all

danger arising from such a contingency would be avoided. Yours respectfully,

STEWART & Co.

New York, July 31st, 1877.

The American Association for the Cure of Inebriates will hold its eighth annual meeting at Chicago, Sept. 12th inst. Important papers will be read.

DR. T. D. CROTHERS has resigned the charge of the Inebriate Asylum at Binghamton, N. Y., and accepted the charge of Walnut Hill Inebriate Asylum, Hartford, to be opened October 1st proximo.

Putnam County Medical Society.—Annual Meeting Report received, but too late for this number. Will appear in next.

Removal.—A. N. BELL, M.D., editor of THE SANITARIAN, has removed his residence from Brooklyn to **Garden City.**

Dr. Bell's purpose in making this change of residence is to free himself from the constraints of general practice and to devote himself more exclusively than hitherto to

Consultations on Sanitary Subjects: To seeking out the causes of disease and preventing them, and to the establishment of healthy surroundings, general and domiciliary, public and private.

He will continue in daily communication with the **Office of The Sanitarian,** 82 Nassau St., New York, and may be addressed by mail as heretofore:

New York, P. O. Box 1956.

Literature.

The Late Dr. Edmund A. Parkes, Professor of Military Hygiene, etc., and author of the justly celebrated work on Practical Hygiene—without which no library of sanitary works is complete—left an admirable manuscript legacy, which has recently been presented to the public.* It forms an excellent manual for tyros in the health service of political organizations—for the use of merchants, lawyers, soldiers, politicians—who imagine that by some kind of inspiration, without any study, they have gained a competent knowledge of chemistry, physiology and hygiene, to enable them to act as intelligent members of Health Boards.

The author shows that legislatures are often ignorant, incompetent or dishonest; that laws are passed in the interest of political parties, and not infrequently of individuals, to enable them to control the people's money; that the laws are seldom mandatory in their character, leaving it optional with local Boards to determine whether they will enforce them or not, thus enabling fraudulent traders, manufacturers, corporate bodies, slaughtering establishments, and the like, to control the action of health officers, and, by the judicious expenditure of a little money, to fill the grave-yards and the pockets of the officials at the same time.

Dr. Parkes has done much to impress legislators with the importance of preserving our rivers, streams and watercourses from pollution. He lays down general principles, by the observance of which the health of those living in cities and towns is to be preserved. The necessity for stringent regulations in this particular is evident. The poor are always driven to the most unhealthy localities, compelled to herd together in closely-massed, unventilated houses, filled with sewer gas, and surrounded by filthy streets. But the poor, the industrious poor, are really the only producers. The wealthy, who live in the finest neighborhoods, superintend the investment of their capital—they naturally receive the profits of such investments, but they do not produce. The vicious poor consume and destroy, but produce nothing. If honest labor makes our wealth, why should we not do something to preserve the poor—the young especially—from the contaminating influence of vice, as well as the destructive influence of disease? Whilst every man

* Public Health: a Concise Sketch of the Sanitary Considerations connected with the Law, with Cities, Houses and Individuals. By Edmund A. Parkes, M.D., revised by William Aitken, M.D. Crown 8vo, pp. 80. Churchill, London.

is free to use his money as he pleases, to invest his capital and speculate in any way he thinks most conducive to his interest, he should not be permitted to build tenements to enrich himself at the expense of human life, any more than the merchant should be allowed to send an unsafe vessel to sea. Indeed, the comparison is in favor of the merchant: if the ship is lost he loses his capital, while those on board lose their lives; the landlord destroys the producer, and loses nothing. Dr. Parkes therefore insists that every house be provided with ample means of ventilation, that the water-supply should be sufficient, and that proper means for the prompt removal of filth of all kinds should be provided in every case. The advantages of sewers are pointed out, and their use recommended in all cases where practicable. The danger arising from the excessive consumption of alcohol, and the misery it brings to individuals, are shown, and the necessity of providing some means for their removal is insisted on. Thus the author summarizes most of the subjects that are of interest to the sanitarian: the treatment of infectious diseases, the causes of unhealthiness in houses, the necessity of selecting proper sites for cities, towns and houses, the duty of avoiding everything in the planning of streets, sewers, water-supply, etc., that would render them more unhealthy than the location itself would make them.

We can recommend the book unhesitatingly as the legacy of one who, during his life, was regarded as a high authority; and we know that it will supply invaluable aid to members of Boards of Health and Sanitary Inspectors, and to all who are desirous of doing what they can to prevent the spread of disease, to improve the public health, and promote the comfort of our homes.

He shows us how much can be done, even under the most defective laws, to improve our condition, if we go to work intelligently. How many a fond parent would risk his own life to save that of his child, who will allow that life to be destroyed by means that he could easily remove if he knew how to accomplish it? Let all such read carefully, and weigh well the truths so well digested in this little book. T. P. C.

Legal Medicine.—Next to the question of Sanitary Reform, there is, perhaps, no subject that occupies a larger share of public attention than Legal Medicine.*

As the name implies, the two professions of law and medicine are here supposed to have a common interest, and yet, the relations are not so intimate as the name would seem to indicate, for the dividing lines between the duties of each may be very distinctly drawn. Neither can possibly trench upon the duties of the other without stepping outside of its proper sphere.

If insanity be a disease susceptible to a greater or less degree of alleviation or of entire cure, by medical and hygienic treatment, then clearly the medical expert is the *judge*, so to say, of the nature and the extent of the disease; and he should be, also, of the degree of responsibility attaching to the patient, for acts committed in consequence of such disease. The duty of the court is, then, to apply the law in such cases and send the patient to the proper *hospital* for treatment. In such cases, a jury can be of no help whatever, for they know nothing of the facts upon which the expert bases his decision, and to ask twelve men for a verdict—*verum dictum*—a true declaration—in such a case, would be to ask them to stultify themselves. As well might the court ask so many plowmen to determine the return of the next comet, or the transit of Venus.

If it be decided that the person is not suffering from any disease that destroys or impairs his mental faculties, then the case can properly go to a jury.

*Revista Sperimentale di Medicina Legale in relazione con l'Antropologia e le Scienze Giuridice e sociali, diretta dal Prof. CARLO LIVI e redatta dai dottari CESARE TREBBI e GAETANO RIVA. Anno III. Fascicalo I.—Gennaio-Marso—Reggio—Emilia tipi di Stefano Calderini, 1877.

If insanity be purely and primarily a mental disease, not originating in any physical lesion, not susceptible of cure or alleviation by medical treatment, then it is folly to call in *medical* experts; the sufferer should be sent to a lunatic *asylum*—a place of refuge—and not to a lunatic *hospital*, such as is provided for them at the present day. The practice of setting up the plea of insanity, in criminal trials before a jury, is the merest legal charlatanry, intended to mislead the jury and embarrass the bench.

Half a dozen incompetent, or not overscrupulous witnesses, may be called as *experts*, and counterbalance the evidence of a competent and thoroughly honest specialist. The purpose of the excellent journal under consideration is, to enlighten the legal, as well as the medical profession, on all questions pertaining to this difficult problem. There is no other journal published in any language, devoted exclusively to Medico-Legal questions. Besides its responsible editors, it numbers among its contributors Moritz Schiff, Franz von Holtzendorf, R. von Krafft-Ebing, author of the "Handbook of Judicial Psychopathology,"* Prof. Andrini, Bellini, and many others. A fasciculus is published every two months, making, at the end of the year, a volume of about 500 pages.

The present number opens with an excellent article, on the dignity of the Physician in judicial questions and on the reforms necessary in actual legislation. (Della Dignita del Medico Nelle Questioni di Giustiza, e delle Relative Réforme all'Attuale Legislazione del Prof. Antonio Raffaele.)

The difficulties encountered by the expert are, "an imperfect knowledge of the scope of Legal Medicine, the want of a clear idea of the position and of the duties the expert is to perform, an absolute ignorance of the value of proofs by specialists, the habit of confounding scientific experts with testimony, and with other experts of inferior qualifications, and, finally, the habit of not making sufficient distinction between cases in which the expert pronounces on the existence of a fact and those in which he reasons on the postulates of science."

The second article gives a series of interesting experiments on "The action of coffee on the sulphate of strychnia." (L'Azione del Caffé sul Solfato di Stricnia. Studio Sperimentale e Communicazione preventiva, del Dott, Attilio Lelli.)

In the first series of experiments two rabbits of equal age and weight were chosen; to one was given five centigrammes of sulphate of strychnia in forty grammes of water; to the other five centigrammes, in an equal quantity of strong infusion of coffee. The first died in ten minutes and the second in fourteen hours, thirty-six minutes.

The next article is a "Critical Examination of the proposed new Penal Code for Italy." (Osservazioni Critiche sul Progetto del nuovo Codice Penale Italiano, per il Prof. Carlo Livi), chief editor of the "Revista." The review is limited to the articles 61 and 62, relating to Insanity and to Legal Medicine.

We will embrace the first opportunity to follow the writer at some length in his examination of these most important questions. T. P. C.

The Medical Register* has appeared in a somewhat more compact form, fifty pages less than last year, but nothing is missing of much practical value, while in general accuracy it is an improvement. We regret the editor's intimation in the preface, that, owing to the "lack of interest in the Register on the part of the native practitioners and those able to sustain such a work," it is doubtful if he will again prepare it. It

*Lehrbuch der Gerichtlichen Psychopathologie mit Berücksichtigung der Gesetzgebung von Oesterreich, Deutschland und Frankreich, von Dr. R. von Krafft-Ebing, Director der Steirmärk, Landesirrenanstalt, Professor an der K. K. Universität, Gralz—Stuttgart Ferd. Enke—1875.

* The Medical Register of New York, New Jersey and Connecticut, for the year commencing June 15th, 1877. Published under the supervision of the New York Medico-Historical Society, Alfred E. M. Purdy, M.D., Editor. Vol. XV. New York: G. P. Putnam's Sons.

has been so long before the profession, and its general utility is so well known, that it would be supererogant to point out its advantages. Besides the registration of no less than 4,844 of physicians, dentists, pharmacists and nurses, we have here an abstract of the principal laws of the States represented, relating to the medical profession, the names, localities and regulations of all the hospitals, asylums, and eleemosynary institutions, institutions and societies of medicine, pharmacy and dentistry; much information not elsewhere obtainable without great trouble and labor. It would surely be a matter of great regret to the medical profession in this vicinity, for Dr. Purdy to cease his connection with the work, and we sincerely trust that the excellencies of this volume will not fail to attract the merited support which seems necessary to his continuance as editor.

Books Received.—Eighth Annual Report Massachusetts State Board of Health; Annual Reports of Boards of Health of Cincinnati, Richmond and Petersburg; Registrar-General's Report, Bermuda; Denton's Sanitary Engineering; Folsom's Disease of the Mind; New York State Board of Charities' Report; Marsh on Hay Fever; Rauchenberg's Report on Hygiene; Kiernan on Katatonia; Lambert on Practical Medicine of To-day; Chadwick's Sanitation of the Dwellings of the Wage Class; Chadwick's Functions of a General Police Force for the Extinction of Fires; State Lunatic Asylum Report, Utica; Trans. Medical Society, West Virginia; Field's Address before Workingmen's Institute, Des Moines; Percy's "Merrit H. Cosh" Prize Essay on Physiological and Therapeutical Action of Phosphorus, etc.; Noyes' Papers Presented to Fifth International Congress of Ophthalmology; Bulkley's Analysis of 774 cases of Skin Disease; Hupp's Cases of Phymosis; Easley's Surgery of the Hand; Trans. Medical and Chirurgical Faculty of Maryland, 1877; Trans. Medical Association of Missouri, 1877; Toner Lecture No. V, by W. W. Keen, M.D.; Hitchcock's Relation of Student Life to Health and Longevity; Culyer's Industrial Art Education; Pooley's Tracheotomy in Diphtheria; Psychological Basis of Religion; Agnew's 160 Cases of Asthenopia; Jones' Poisonous Effects of Cyanide of Potassium; Simon's Report on State Medicine and Public Hygiene; Minor's Notes on Epidemiology; Bowditch's Growth of Children; Hay's Case of Recurring Sarcomatous Tumor; Lambert's Tubercular Nephritis; Macdonald's General Paresis; Municipal Manual of Detroit; Report of School Committee of Providence; McParlin's History and Climate of New Mexico; Rockwell's Differential Indications for the Use of the Faradic and Galvanic Currents; Sims on the Discovery of Anæsthesia; Report of Cincinnati Hospital, 1876; Bartlett's Origin of Symbols; Thomas' Prophylactic Treatment of Placenta Previa; Yandell's Report on Dermatology; Thomas' Case of Abdominal Pregnancy Treated by Laparotomy. Die Fleischkost des Menschen vom sanitairen und markt polizeilichen Standpunkte, von A. C. Gerlach; Transmission de la Tuberculose par les vaies digestives—Experiences Nouvelles—par M. A. Chauveau; Assainissement de la Seine, par M. A. Durand—Claye, Ingénieur des ponts et chaussées. L'Assainissement de Paris—La Seine, la Presqu'ill de Grennevilliers, la Bievre. Résumé des documens officiels, présentés au Conseil municipal de Paris par le Dr. Prosper de Pietra-Santa.

New Exchanges Received.—O Progresso Medico.—Redactor Principal, Dr. Domingos de Almeida Martins Costa, Membro titular da imperial Academia de Medicina do Rio de Janeiro, medico da Casa de Sande de N. S. da Ajuda, etc., etc. Publica—se nos dias 5 e 20 de cada mez. Rio de Janeiro, Typographia Academica, 73 Rua Sete de Setembro, 1877. Nos. 1 to 14.

Annales de Démographie Internationale, Recueil trimestriel de travaux originaux et de documents Statistiques et bulletin bibliographique spécial Publié par A. Chervin, Paris, Librarie de Guillaume et Cie, 1877.

RUDOLF L. C. VIRCHOW.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. OCTOBER, 1877. NO. 55.

TESTAMENTARY CAPACITY.

By ISAAC RAY, M.D.,

Author of "Mental Pathology," "Mental Hygiene," etc., etc.

Proceedings of New York Medico-Legal Society, June 13th, 1877,
Prof. F. H. HAMILTON, M.D., LL.D., President, in the Chair.

To the question, What shall become of a man's property after death? the law of our own and of every civilized people, in recognition of what was deemed by the old jurists as a *jus naturale*, replies, that he may dispose of it himself before he dies, under some limitations required by a regard for the rights of others. It only requires that when exercising this right he should be of sound mind; and this leads to the inquiry, What is meant by a sound mind? At first blush this would seem to be a strictly medical question, and, so regarding it, the physician considers it as a matter of health or disease, of normal or abnormal condition. The jurist, on the other hand, ignoring entirely the physical element implied in the question, considers it solely as a matter of mental capacity. As in cases that come into litigation both parties urge their views as the proper guide to the ultimate decision, discrepancy and conflict must naturally follow. Much of this diversity of views arose on both sides, undoubtedly, from a very imperfect knowledge of the subject matter itself, as the slightest examination will show.

From the earliest times the law has recognized insanity as a disturbing element in human conduct, and allowed it to modify, more or less, its administration of justice. Therefore, the question of questions on this subject is, how far, and in what manner, this disturbing influence really extends. To answer this question, resort has been had to two sources of instruction. One is, that observation of the insane which any one may make in the ordinary walks of life. While we admit that much may possibly be learned in this way, yet it is no less certain that impressions thus obtained are quite unreliable for any practical purpose. A very few cases only can come under the cognizance of any individual, and the notice taken of them must necessarily be hasty and superficial. The more demonstrative symptoms only will arrest the attention, while the less obvious, though, perhaps, more significant, may be overlooked altogether. Neither in

this way is there any element of progress. No amount of attainment leads to fresh attainment. It lives and dies with him who makes it. Observers more sagacious than Shakspere and Walter Scott can scarcely be expected. And yet the current ideas respecting insanity are chiefly derived from this source.

The other source of information is that where insanity is studied as a disease, in the spirit and methods of a scientific inquiry. Here not a few only, but all its phenomena are observed. Its various phases, as presented from day to day, from month to month, and from year to year, in the different grades and stages, are carefully studied, with the abundant facilities afforded by the modern hospital for the insane. The study of the physiological and pathological laws by which it is governed, of the ancestral defects in which it originates, and of the adverse influences by which it is developed, throws light on the character of each individual case, without which we can scarcely avoid mistake.

Ideas derived from this quarter have always determined to some extent the rules and practices of the English law, not, however, without great resistance, especially in modern times. The classification of mental diseases, the terms and phrases found in medical books, were freely adopted into the civil law, with such practical consequences as they would naturally suggest. The psychological relations of the different forms of insanity were but little considered by the ancient physicians, and, of course, they could furnish the lawyers with little aid in the work respecting it which fell to them. Indeed it could not have been otherwise, for their means of learning about insanity were hardly better than those possessed by the world in general. Their ignorance of anatomy and physiology led to the crudest theories on the nature of disease, and their observation of its phenomena was directed by a false pathology, rather than by any methods of exact and patient inquiry. The only advantage they possessed over others in the study of insanity, consisted in the more close and continuous observation of individual cases which their professional duties required. Through the whole mediæval period, and long after the revival of learning, medical writers were content to abide by the notions of Celsus and Galen, and these were all they could offer to aid the lawyer and the law-giver in the administration of justice. By this aid, such as it was, the latter undertook to say how far and in what way insanity modifies the legal consequences of human conduct. To simplify the process, they found it convenient to consider the disease in its different forms, or, more correctly speaking, in its different grades of apparent severity. The first systematic attempt of this kind was made by Lord Coke, who recognized four descriptions of persons as being *non compos mentis*—viz.: idiots; those who, by sickness, grief or other accident, have wholly lost their memory and understanding; those called lunatics, who have sometimes their understanding and sometimes not; and lastly, those who, by their own vicious act, have deprived themselves for a time of their memory and understanding, such as drunkards. Rude as this classification is, it has some semblance of correctness; but, like the more elaborate rules and tests of more recent times, it labors under the defect of being difficult of application. It affords no help to settle the

question whether, in a given case, the person concerned belongs to either of these classes. Regarded as a scientific formulary it is quite defective, because it ignores completely some well-recognized forms of mental disease. Many years afterwards, Lord Hale, availing himself of the more advanced medical knowledge of his time, corrected this defect in some degree, and ventured upon some rules for the settlement of the practical question. But, with all their defects, and in the face of the better knowledge of our times, the doctrines of these men still govern, in a considerable degree, the decisions of English and American courts.

Unquestionably, they reflected and confirmed the prevalent sentiment which regarded the last will and testament as an instrument too sacred to be easily disturbed. And we know, as a matter of fact, how jealously it has been guarded from all assaults, and especially from such as were directed against the mental competence of the testator Let us now examine the decisions of the courts in the new light shed upon the subject by the progress of medical science during the last two centuries, for within that period have occurred the two great discoveries of the circulation of the blood and of the functions of the nerves. And the same period has witnessed the establishment of multitudes of hospitals for the insane, affording opportunities for the clincal study of the disease, and for the observation of the ways, manners, conduct and conversation of the insane never enjoyed before.

In that form of mental disorder called acute mania, in which the mental movements are continuously strange, wild and incoherent—madness without method—the testamentary incompetence of the patient has never been questioned. Indeed, the condition is one in which we should hardly expect any disposition to make a will, and I am not aware that such a one has ever been offered for probate. Lord Coke, you observe, speaks of a description of lunatics who have sometimes understanding and sometimes not. This statement has reference to a phenomenon once supposed to be a very common occurrence—I mean that of lucid intervals, as they are called. So common were they thought to be, that in every case of alleged insanity, the question of a lucid interval was always raised as a matter of course. In fact, the practice has not yet entirely ceased. The idea is, that in most insane people reason returns at intervals, and with it their original competence and responsibility. The law not only supposes the probability of such a period, but the party availing himself of the plea of insanity was obliged to show—even though the burden of proof may not always have been put upon him directly—that there was no lucid interval. Considering how small a foundation this whole doctrine of lucid intervals has, it is difficult to account for its prevalence. Unquestionably, it sometimes happens that an insane person comes to himself, manifesting his natural propriety of conduct and conversation, his memory and perception apparently clear, the cloud returning after a few days as dark and dense as before. Exactly how far the mind in this condition is free from the influence of disease we never can know. Considering, however, the suddenness of the change, the brevity of its duration, and the long continuance of the disease when it occurs in chronic cases, it is not likely that the mind is restored to its normal degree of clearness. It must be borne

in mind, also, that, as described by distinguished legal authorities, such intervals are of very rare occurrence. I have not seen more than half a dozen cases in all my experience. All nervous diseases are subject, more or less, to a certain law of periodicity, by reason of which at intervals their regular course is changed, and other incidents come and go in a certain order of succession. The change thus produced may sometimes amount to an entire disappearance of the signs of disease. This phenomenon is not unfrequently witnessed in the early stage of acute mania. Within the first month there may occur a rather sudden cessation of the manifestations of disease, in which the patient is calm, quiet, talks and behaves sensibly, though, if closely observed, there will be found some indistinctness of memory and confusion of thought, especially with reference to the circumstances of the attack. This condition has often been confounded with lucid intervals, especially by lawyers, who find it difficult to see a distinction which can be visible only to the long-practiced observer. To the common eye, any remission in which the patient is tolerably calm after being violent, and answers a few questions rationally, seems like a lucid interval.

Admitting, as I do, that a valid will may be made in the lucid interval, it is so likely that some shadow of disease may rest upon it, that any testamentary act during that period should be very closely scrutinized. Some qualifications for the act are required not otherwise needed. It should be shown that changes in the circumstances and conditions of those whom the testator is disposed to benefit, (having occurred when he was incapable of understanding and appreciating them,) were brought to his knowledge and comprehension, since such things would naturally affect the dispositions of the will. Because it must be borne in mind that the past, for months or years, may have been a complete blank, or filled with strange and deceptive images. In short, we may conceive of a case where every testamentary qualification was possessed; but certainly the fact must be of rare occurrence, and difficult of proof. I know of only one case reported of a will made in what was called improperly a lucid interval, and established, that of *Cartwright* v. *Cartwright*, 1 Phillimore, 90. The testator was in an asylum, and so severe was the grade of her disease, that she had restraint on her limbs at the moment when she called for pen, ink and paper in order to write her will. This she did at last, after writing one on several pieces of paper, which she tore up and threw into the grate, and walking up and down wildly, and muttering to herself. The will was established, the court deciding that it was made during a lucid interval, on the strength of the internal evidence, as it made a natural and consistent distribution of her property. This fact the court considered conclusive proof that a lucid interval had taken place. The result may have been right; but it was reached by a sort of logic known as reasoning in a circle. The correctness of the will proves the interval, and the interval being proved, makes the will valid. Had the court, while squarely admitting the insanity of the testator, declared that the character of the act showed that she was still rational enough to make a valid will, it would have uttered good sense and good science. Here we see the binding influence of the old law as expounded by Coke. It being

proved that the testator was a lunatic, she was necessarily *non compos*, and could become otherwise only by recovery or a lucid interval.

This influence has not yet entirely lost its force, for I observe that lawyers are not content with proving competence sufficient for the act in question, but also labor hard to prove also perfect soundness of mind. In a case that came under notice two or three years since, an attempt was made to void the contracts of a person recently deceased, on the ground of insanity. It was shown that the transaction—the sale of coal lands—was just and fair in every particular; that he obtained a price pronounced by his neighbors and advisers to be a fair one; and that he sold, then and there, without waiting for a prospective rise in value, simply because he needed the money. That he was a lawyer in full practice, a leader at his bar almost up to the day of his death, and all the while the trusted counsellor of several large corporations—all this needed no proof, for it was seen by everybody. And yet, because of the admitted fact that this man had always been remarkably eccentric in his ways and manners, week after week was spent in endeavoring to show either that he was or was not technically insane. If the administration of the law has for its object the promotion of justice among men, we may venture to say that the means it used in this instance were signally irrelevant.

Farther examination of Coke's classification of the *non compotes mentis*, furnishes fresh proof how little help it gave the medical jurist in settling the questions that came before him.

"One class," he says, "consists of those who, by sickness, grief or other accident, have wholly lost their memory and understanding." The word *wholly* is probably used inadvertently, because it would refer to persons in the very last stage of dementia, whose acts would scarcely become matter of litigation; whereas he had in mind, no doubt, a numerous class, who, while moving about among men, and taking some part in the affairs of life, are, nevertheless, laboring under considerable mental infirmity. We have reason to think that this class was meant to embrace the subjects of senile dementia, of the weakness of old age, and of the damage inflicted by paralysis and other cerebral affections. His allusion to grief and accidents implies, probably, a mistaken notion he had conceived respecting the cause of the mental affection. Taken as a whole, this class, unquestionably, has always furnished the courts with a greater amount of litigation than all others put together, in the matter of wills. The more exact and well-defined are our notions of mental capacity, the more foundation they have in close personal observation of this class of persons, the better will be our administration of justice. Much of the apparent conflict in the adjudication of their cases has arisen, I think, from a faulty appreciation of the mental qualities chiefly concerned; and therefore I invite your attention, for a moment, to this point.

Old age is usually accompanied by a certain enfeeblement of the mental as well as the bodily powers. This condition does not imply unsoundness or incompetence. It merely means a diminished power of endurance; an incapacity for those long-sustained efforts once comparatively easy; more difficulty in grasping obscure and remote relations. The mind has lost none of its characteristic tastes, and

none of its fondness for its accustomed pursuits; but it is satisfied with easier tasks and welcomes longer intervals of rest. The only mental faculty obviously involved in this condition is the memory, especially of recent incidents, even while old ones are well retained. The forgetfulness of young people comes from carelessness and a predominant interest in other thoughts. With the aged the new impression, however vivid at first, fades away from a lack of power in the brain to retain it. It must be quickly and frequently repeated, before it will endure. So far the change may be considered as the normal result of old age, and destitute of any legal consequences. Occasionally, indeed, in the closing years, the mind displays even more than its wonted vigor and brilliancy. It was these exceptional instances that led the poet Waller to say:

> "The soul's dark cottage, battered and decayed,
> Lets in new light through chinks which time has made."

Sometimes the change here described proceeds still farther, and induces a condition that is abnormal, ending in *senile dementia*. The memory becomes less and less tenacious; the perceptions less exact and clear, one person or thing being mistaken for another, and their relations misunderstood. Then the judgment—that is, the power of discerning the relations of cause and effect, of distinguishing between the specious and true, of taking in the remoter considerations germane to the case in hand, of weighing and rightly appreciating conflicting claims—loses its vigor, and is easily led astray by false lights. And so the process of decay goes on, until it reaches its utmost limit in virtual extinction of the mental powers. Now what we would like to know is, the precise point at which testamentary capacity ends; and this, of course, is beyond our reach. As to the effect of this condition, both in its earliest and its latest stage, there can be no diversity of opinion. It is during the intermediate stage that it gives rise to obscurity, doubt, conflicting evidence and abundant litigation.

To arrive at a correct decision, we must first understand what are the intellectual powers necessary to testamentary capacity. In the first place, the memory must be active enough to bring up to mind all those who have natural claims on the bounty of the testator; to make him aware of the nature of his property, its location, the incumbrances upon it and his debts. If he makes bequests in certain sums of money, he should know with some degree of exactness the value of his property; and if he has made previous wills, he should be aware of their contents. Whether he actually had such a memory will generally be determined, for the most part, by the circumstances of the transaction. In most cases evidence is given respecting the general condition of the memory as manifested in the ordinary discourse, and this, coming, as it does, in a loose, detached, fragmentary manner, from persons usually unaccustomed to observe mental phenomena closely, requires to be carefully and intelligently examined. The lapses of memory exhibited by all old people must be distinguished from that utter loss of memory that no effort can retrieve, even for a moment. The former is chiefly in regard to recent things, which are readily brought back to mind and are retained for awhile. The latter embraces old as well as recent incidents, impressions cus-

tomary as well as casual, ideas the most as well as the least familiar. The old man who is constantly mislaying his spectacles, forgetting the face of the person to whom he was introduced the day before, and marching up the broad aisle of the church with an umbrella over his head, may be found, when his attention is specially directed to a subject, to remember its prominent points, understand them well, and govern himself accordingly.

Let it be observed, in this connection, that many of those old people so forgetful of passing events and so careless of little proprieties, need only to have their attention fixed on the matter in hand to display no lack of memory or understanding. If, on the other hand, a person has utterly forgotten the events of his earlier age; if he cannot tell his own age, or the year of our national independence, is unable to tell how many six and six make, and has forgotten whether his estate is in lands or houses or stocks, he surely has lost his testamentary capacity.

The mental infirmity most often the source of testamentary incapacity, is impaired judgment. To make an equitable distribution of his estate among those connected with him by blood or affection—such a one, I mean, as he would have made while confessedly sound—implies on the part of the testator a variety of considerations that cannot safely be overlooked. He should be able to appreciate properly the nature of their claims, their present and prospective necessities and the favors they have already received; and all this, not to mention other considerations, requires a nice discrimination, and the power of looking before and after. If the bequests indicate any deficiency in these respects, it certainly furnishes ground of suspicion.

There is a large class, you observe, still unprovided for in the schedule of Coke. I refer to that of persons neither idiots, lunatics, nor the victims of sickness, grief or old age—persons having by nature a deficient mental endowment, and embraced under the general appellation of imbeciles. The wills of such persons often come into dispute, and though their disposal is determined by the same principles as those last referred to, yet they give rise to a larger range of speculation and doubt. In the one case, the question on which the result may depend is, How much mental power has been lost? while in the other the question is, How much was ever possessed? The difficulty of the question is increased by the fact that in many, if not most imbeciles, there is much inequality in the strength and development of the several mental faculties. The same person may be shrewd, even sharp, in some transactions, dull and foolish in others; at one moment uttering a pithy remark, at another leaving no doubt of his native simplicity. With shrewdness and folly thus displayed side by side, it is not strange that different observers are sometimes very differently impressed by what they witness. One who has sold him a gun or a fishing-rod, or made for him some little article of use or ornament, and listened to his comments, is ready to pronounce him about as sensible as the generality of men. Another who has witnessed his conduct in affairs requiring some prudence and judgment, is strongly impressed with the depth and breadth of his simplicity. And this is a specimen of the evidence heard in our courts, when they are called to adjudicate in cases involving the persons

or property of simple-minded people. It is also a lamentable fact, that the disposition to form positive conclusions on the strength of a partial, one-sided observation, is about as common among men of some culture as it is among those who are without pretensions to any. Until mental manifestations are better understood, we shall continue to witness these strangely conflicting conclusions in litigation involving the interests of imbecile persons.

To meet this state of things, the first thought was to fix upon some arbitrary, specific standard of mental power, by which the minds of imbeciles should be measured. I know of only one that has survived the test of experience, and even that is seldom offered now. It has been said with some show of authority, that to make a valid will one must have capacity sufficient to make a contract. Had these conditions been reversed, and the proposition been, that as much mind was required to make a contract as to make a will, it would have had as much support in the nature of things as the other, and that is none at all. Until we are satisfied as to the exact amount of mind necessary to make a contract, this measure will scarcely help us, even with the estimate I once heard given from the bench, that it is as much as is required in the ordinary business of life; which must remind us of that venerable measure of size with which we are all familiar, "As big as a piece of chalk." The only rule founded in reason and justice is, sufficient mind for the occasion. I hardly need to suggest, that to distribute a large estate equitably and judiciously among a considerable number of persons and institutions, must require a stronger and wider exercise of mind than would be needed for the disposal of a small estate among the few legally entitled to a share of it. And as much may be said of a contract involving many contingencies, as compared with one disposing of a few acres of land.

Thus far, it will be seen, the elements of testamentary capacity are strictly intellectual, pertaining to the pure reason. A testament, however, is not always the product exclusively of the understanding. The moral part of our nature—the sentiments, affections and emotions—may be as potent an agency in its production as the intellectual. Hopes and fears, attachments new and old, a sense of dependence, a chronic habit of submission and deference, assiduous attentions, crafty insinuations—these may greatly prevail over the most obvious claims created by the law of inheritance. Inducements of this character are not excluded by the law. All that the law requires in feeble-minded people is, that they be not excessive, calculated to drive the mind from well-chosen, well-matured arrangements, and divert the course of property into channels it would not otherwise have taken.

In examining these cases, we must never forget that both the intellectual and the moral faculties may have been concerned in their production, because, if either of these factors are left out of the account, we are greatly in danger of being misled. Nor must we forget, while investigating their respective agency, that they may act with some degree of independence of each other. The same person who thinks correctly and sensibly so far as he goes, may readily yield to inducements strongly presented to his feelings. In a case lately tried in Massachusetts, this distinction was so sharply and so pertinently

made, that it may claim a moment's attention. A man, never married, confessedly feeble-minded, and under guardianship, concluded to make his will, which he did without urging or hindrance from any quarter. In this he bequeathed his property—$200,000—to various charitable institutions, and to a few intimate friends from whom he had received much care and kindness, completely ignoring his sisters, for the reason, as it appeared in evidence, that they took no notice of him and were wealthy enough already. In making the will he was aided by a lawyer of the highest moral standing, and the whole transaction was free from suspicious circumstances. Two or three years afterwards, while in company of certain persons whose relations to him gave them much influence over him, he became so much excited by their reproaches and solicitations, that he called for the will and drew his pen through his signature. The will was offered for probate; but the judge declined to approve it, and an appeal was made to the Supreme Judicial Court, in which a trial ended in the establishment of the will. The jury virtually said the will was a rational act, rationally and calmly done, with memory and judgment sufficient for the purpose; but the revocation was done in a moment of passion, excited by the suggestions of others, and too strong for his feeble mind to resist. The verdict of the jury was approved by the court.

The question of testamentary capacity in feeble-minded people is generally connected with that of outside influence. Sound-minded people may and often do ask advice in the final disposition of their property, and the result is, very likely, all the better for it. Such advice may be needed all the more where the mind is weakened by nature or disease; but when obtained, it is always, and very justly, viewed by the law with suspicion, and the dominant question is, whether or not the testator has been subjected to what is called *undue influence*—because, sound or unsound, strong or weak, his will must be his own will, and not another's. If the influence is such, that the wishes and the interests of other parties, rather than the testator's, are represented, then the law supposes that the will is really not his will. In order to establish the fact of undue influence, however, a foundation must be laid by first proving the fact of mental deficiency. The attempt is sometimes made by lawyers, aided by physicians, to reverse the process. Unless the testator has clearly manifested some mental unsoundness by his previous acts, the proof of undue influence should be strong enough to be unmistakable. It often happens that no such can be shown; that up to the moment of the making of the will, no indications of feebleness, of delusion or wandering have been witnessed. I do not say that even under such circumstances undue influence may not be exerted. When we consider the enfeebling effect on body and mind of a long last illness, of the many infirmities that often attend this period, and of the utter prostration of the will produced by pain and a sense of complete dependence, we can scarcely conceive of conditions better fitted for the exercise of an undue influence over testamentary dispositions. The courts of our time have become quite familiar with a certain class of cases presenting these traits. An old man marries a young woman, and within a year or two dies, leaving a will greatly in her favor, much

to the disappointment of relatives who would otherwise have received the whole of the estate. These cases are exceedingly embarrassing, for we are often left without any clew to guide us to a rightful conclusion. We are sure it is such a will as the testator would not have made in the vigor and flush of health; while we hesitate to say, under the conviction that a man has a right to do what he pleases with his own, how far a sense of gratitude for kindness and service may be allowed to shape his decision. Fortunately, perhaps, it frequently happens that some circumstance sheds a little light upon the case, enabling the jury, if not to decide according to its legal merits, yet to do what, in their rude estimate, "is about right."

You observed, no doubt, that Coke, in his classification of mental disorders, ignores entirely a form of the disease which is far from being very rare. The reason was, probably, that it seemed so partial in its operation—it left so much of the mind free, apparently, from its influence—that it was not supposed to impair the person's responsibility for civil or criminal acts. Nearly a hundred years went by before it was first formally recognized by Lord Hale, as well as another hundred years after him before the law began to take it into the account as an element of excuse for human delinquency, or regard it as a claim on its protection. I refer to what is now called partial insanity, in which a person, while entertaining some notions having no possible existence, in all other respects talks and acts like other men. How to meet the difficulties suggested by this form of mental disease, was a problem entirely beyond the reach of this luminary of the English law; and he passed it along to his successors, many of whom, even to this day, have been as unwilling as he to give it any practical effect in the administration of justice. The light shed upon the nature of disease, and especially of insanity, by our better methods and opportunities of study, has not been utterly disregarded; and though we are too often obliged to witness the display of the old ignorance, rather than the new knowledge, yet the time is coming, it is to be hoped, when the law will be in entire accordance with science.

It is somewhat curious, that up to the present century we hear nothing of partial insanity, strictly so called, in civil cases; and in criminal cases, where it was sometimes offered in defense, it scarcely received a respectful hearing. The common idea that the monomaniac had still reason enough left for all practical purposes, protected his testamentary privileges; and generally, it may be supposed, the rule worked no injustice. Had the courts been brought face to face with a will the manifest offspring of a gross delusion, they might have refused to sustain it. It is hardly conceivable that they would have approved a will devising a large estate to the building of a railway to the moon (though hardly more a folly than many exclusively mundane that have been built), however prudent, sagacious and intelligent the testator may have been in the ordinary affairs of life. It was not until 1828 that this question of the legal effect of partial insanity on the testamentary capacity was squarely met and rightly decided. I refer, of course, to the case of *Dew* v. *Clarke*, which came up for final adjudication in one of the English Ecclesiastical Courts, Sir John Nicholl presiding. The matter in issue was the validity of the will of a London surgeon, who bequeathed the bulk of his estate to his

nephews, leaving only a life interest in a small portion of it to a daughter, his only child. The testator had, for many years, very creditably practiced his profession; and though regarded by his patients and many others as eccentric and irritable, was never suspected by them of laboring under any kind of mental derangement. On the other hand, it appeared that he had always entertained the strongest aversion towards this daughter, describing her to his friends and strangers as prone to all manner of vice—as a perfect fiend, an imp of Satan—charging her even with impossible crimes. His treatment of her was almost incredibly savage, not only compelling her to perform the most menial offices, but he would often strike her with his clenched fists, cut her flesh with a horse-whip, and once, when she was only ten or eleven years old, he stripped her naked, tied her to a bed-post, and after flogging her with a large rod intertwisted with brass wire, rubbed her back with brine. It appeared that there was no cause for this extraordinary antipathy. The girl was described by all who knew her as amiable and docile in her disposition, and perfectly correct in her deportment. Against this will the judge pronounced an exhaustive and most elaborate judgment, untrammelled as he was by the precedents of the common law, and inspired by the larger spirit and freedom of the civil law. Remarkably well informed on the nature of insanity, he discussed its effect on the mind of the testator with a sagacity never before witnessed in a court of law, reaching to the conclusion that the mental disorder was fatal to the validity of the will. Against the doctrine there announced, novel and unprecedented as it was, no voice of dissent has ever been raised. It is one of the few things in the medical jurisprudence of insanity which may be considered as established.

Sir John Nicholl, be it observed, was careful to restrict the operation of the principle to the case before him. The mental disorder was sufficient to vitiate, not any will, but the will in question. Had the testator bequeathed his property to his daughter, he would, probably, have established the will, insane as he was. The insanity would have been no bar to a natural and proper distribution of his estate; and so, I apprehend, the matter is now generally regarded. The objection arises only when the distribution is not deemed to be natural and proper by various relations, who find it for their interests to destroy the will. The principle being settled that insanity does not necessarily impair a man's capacity to make a will, any more than it destroys his power to do many other things as well as ever, its effect ought not to be determined by any arbitrary rule, but rather by that judicious consideration of the various circumstances of the case which is founded on correct views of the nature of insanity and the ordinary motives of human conduct. In accordance with these views, a case was adjudicated in the Court of Queen's Bench, in 1870, *Banks* v. *Goodfellow*, L. R. v. Q. 549, Chief Justice Cockburn delivering the opinion of the court. Here a will was established, notwithstanding the testator was proved to have entertained some gross delusions, for it was obvious that these delusions could not possibly have influenced the dispositions of the will. These two cases, I presume, have settled the rule of law in regard to the effect of delusions on testamentary competence, and thus, happily, brought the law of the land into harmony with the laws, physiological and pathological,

of the mental constitution. And let me say in this connection, that the effect of mental impairments on the testamentary power is not to be estimated solely by their demonstrative symptoms, for it may be greatest when scarcely seen by the world at large. I have never met with worse wills than some made under such circumstances. I have known a will made shortly after an apparently slight attack of paralysis, pre-eminently absurd, irrelevant to any worthy purpose, and almost if not quite impracticable of execution. And yet the testator seemed to have completely recovered, and continued his ordinary pursuits till prostrated by a second attack.

Wise and proper as the doctrine may be, generally stated, that a delusion should vitiate any testamentary disposition made under its influence, cases can easily be imagined where it would be exceedingly embarrassing to determine the exact range of its application. We readily admit that the will of a man disinheriting all his heirs-at-law —brothers, sisters, nephews and nieces—in the belief that they have been attempting to take his life, should not stand. But supposing this delusion referred only to a single relative, the rest of them being properly remembered, I think we should hesitate to break the will for that reason alone.

In pursuing the progress of thought on this subject, we meet at last one of those extravagances of opinion, which, coming from men of commanding intellect, produce surprise, if not admiration. Lord Brougham declared on one occasion, that partial insanity, however limited apparently, as well as the more general forms of the disease, should vitiate all the patient's civil acts. He regards the mind as a single, indivisible potency, and consequently that any impairment of it must be absolute, not partial. On this theory, of course, there is no place for the practice of dividing and subdividing the mind, some portions becoming unsound, while others remain sound. Lord Brougham's doctrine is not without warrant, certainly, in the prevalent metaphysical theories of the last century, and, accepting them, it would be easier to reject it with feelings of wonder and surprise, than to refute it. If inconsistency would furnish a conclusive argument against it, it may be found in the statement he once made, that a man might be so unsound as to be regarded by his Maker as irresponsible for criminal acts, while he might be justly held responsible by his fellow-men.

And here we see the injustice that might be committed by making insanity, abstractly speaking, incompatible with testamentary capacity; for if we say that a man who disinherits his heirs-at-law under the delusion that they have attempted to poison him is thereby *non compos*, how shall we answer the question whether his will should be approved, even if he had bequeathed his property to those heirs-at-law, notwithstanding his delusions?

The effect on testamentary capacity of extraordinary beliefs, fanciful projects, or bequests for impracticable purposes, is frequently not very easily determined. Such things are suggestive of insanity, and the event has sometimes been made to turn on nice distinctions between insanity and eccentricity. In these cases the proper line of inquiry must depend on the circumstances of each particular case, and the decision should be governed more by the dictates of common sense, than any arbitrary rules of law. In some cases there can be

little difficulty in arriving at a satisfactory conclusion. If a man noted for some oddities of thinking and acting, but otherwise correct and shrewd, believes that Brandreth's pills are a certain cure for all diseases whatever, and that everybody who would take enough of them would live to a good old age, this notion would hardly vitiate a will making unexpected and unjust bequests having no connection with and traceable in no way to it. If, on the contrary, he had devoted a considerable portion of his estate to the maintenance of a fund for supplying the poor with Brandreth's pills, this, certainly, would be good reason for breaking the will. Take another case. In Massachusetts, lately, an elderly gentleman in failing health, and with divers nervous ailments, was induced to try the movement cure, and came at last to conceive the most exaggerated notions of its medical efficacy, though it never helped him much. Indeed some of these notions almost, if not quite, amounted to delusion. In this state of mind he made his will, by which he appropriated a great part of his estate to the establishment of an asylum for nervous invalids to be treated by the movement method. I have no hesitation in saying that that will was the offspring of a morbid nervous condition, if not of delusion, and therefore not to be established. Whether certain mental manifestations are indicative of insanity or only eccentricity, is a point not always easily settled; and no splitting of hairs on the question will prove so satisfactory as the exercise of a little common sense. In many of these cases where, apparently, the mental twist is very limited and of doubtful character, a close scrutiny of the conduct and conversation will show here and there traces of a more extensive influence, thus shedding additional light on the matter in hand.

In presenting the subject of testamentary capacity in the way I have, it was for the purpose of giving to the pathological element the prominence it rightfully deserves, and which consequently ought to secure it a controlling influence in disputed cases. And let me say, in conclusion, that the administration of justice in this particular must often be imperfect, until the light of medical science is freely admitted and used,—not the light that has traveled down to us from the times of Coke and Hale, but that which we owe to the progress of knowledge during the present century—greater, far greater, indeed, than that of all other centuries together.

———o———

Fetid Feet.—In an article in the *Révue de Thérapeutique*, it is stated that an immediate remedy for this noisome affection is found in washing the feet with a solution (1 in 100) of chloral, and keeping them enveloped in compresses wetted with the same solution. Results as satisfactory have long since been obtained by Dr. Bourdon, by the employment of a solution (commencing with 3 in 1000) of the permanganate of potash. Dr. Berthold, also, indicates an efficacious method which is less troublesome than that of bathing with solutions. It consists in powdering the interior of the patient's socks with a powder composed of one part of salicylic acid and five of starch. This is, too, an excellent mode of treating the local sweating which in fat persons often takes place between the scrotum and the thighs, and if not arrested leads to a troublesome eczema, and its accompanying pruritus.—*Med. Times and Gaz.*, Aug. 4th, 1877.

HEALTHY HOUSES.

An Abstract.*

"**Sanitation of the Dwellings of the Wage Class,**" is a powerful plea for the recognition of sanitary science in architectural art and practice, which have hitherto excluded it. Architectural treatises, as a rule, make no reference to it—no allowance for it. Conveniences of living and agreeableness of aspect are regarded and accepted as not only the primary objects, but frequently the only objects, worthy of consideration, and to these all others are not infrequently sacrificed. In illustration of the necessity of effort for the removal of such an obstacle to the progress of sanitary science, citations are made in the pamphlet before us of what the author is pleased to call rudimentary tests by the relative death-rates in a district of Glasgow, where the rate in houses occupied by the wage classes had been about 42 per 1,000, was, by giving a place to sanitary science in new dwellings, reduced to 28 per 1,000 in the same people, on the same site; and in some places in London where the death-rate had been equally high, it had been reduced to 17 or 18 per 1,000. But "a death-rate which is a mean of the death-rate of the whole population of a city is almost invariably a pernicious misrepresentation. Thus we have part of a sub-district in London, comprising houses in good condition, where the death-rate does not exceed 11.3 in 1,000, whilst there are adjacent dwellings within the same sub-district where the death-rates rise to the extent of 38 in 1,000 from year to year. A mean of the two is a misrepresentation of the condition of both. . . . One elementary test of the condition of any class of houses, is the extent of the prevalence of the diseases agreed to be classed as the foul air diseases, or of diseases of the epidemic, endemic or zymotic class. Another primary test is that of the infantile mortality, the first of which is the proportion of the deaths of infants under one year to the births of infants within that same year. This has been chosen as a primary test, because infants are to the least degree affected by fluctuations by changes of residences, because they are to the least extent affected by occupations, and because they are most of their time in the house, and because in-

* Suggestions for the Competiton in the Sanitation of the Dwellings of the Wage Classes for the prize of a gold cup of the value of five thousand francs, to that municipal or local authority or private association which shall, by the improvement of the dwellings of the wage classes, effect the greatest reduction of their death-rates at the lowest cost, to be awarded by the King of the Belgians, at the next International Sanitary Congress. By Edwin Chadwick, C.B., late Chief Executive Officer of the First General Board of Health in England. Printed for circulation by order of the Council of the Society of Arts. London: printed by W. Trounce, 10 Gough Square, E.C., 1877.

fant life is most affected by vitiated air. . . A death-rate comprising the infant mortality with the proportion of deaths from the foul air diseases would, if well observed, within a year form a safe basis for comparison. . . .

"It was an early direction of that very able army sanitarian, Sir John Pringle, noted in his work on 'Diseases of the Army,' that for the selection of sites for encampments, observation should be made of the height of water in wells near the surface—for he said he had always remarked of the places where the water in wells was near the surface, that they were bad camping grounds.

"The soundness of this observation has been proved of late times in towns newly drained under the Public Health Act, where the drainage works, when properly executed, have lowered the subsoil water, and lowered the water in wells. The result has been a considerable reduction of the diseases of the respiratory organs. For various reasons, the first item proposed for a sanitary specification is:

"'That the water table of the site of the house and the adjacent uncovered land should be lowered by subsoil drainage to not less than three feet from the surface.' . . . .

"Assuming that this first condition of the sanitary specification has been complied with, the habitation, even upon a clean, well-dried gravel foundation, should be protected from rising wet or damp, or from earth exhalations, by another provision, viz.:

"'The flooring of the house shall be constructed of a material which is impermeable to wet, and so laid as to exclude ascending moisture or damp, and all earth exhalations.'

"This ought absolutely to be provided for, and it may be accomplished by several means, as by a Portland cement concrete, or most completely by an asphalt covering, or by vitreous tiles laid upon a good concrete.

"On the next question, the 'wall question,' it may be stated that those medical officers who visit the common crowded dwellings of the wage classes in our towns, even when they are unoccupied, are aware that the walls have a peculiar depressing, musty or fetid smell. On visits after severe epidemic attacks in some of the dwellings a peculiar offensive smell has been perceived, and on inquiry what that could possibly be from, the answer has been that it was the 'dead man's smell,' the dead body having been kept too long near the wall in a state of decomposition before it could be removed for interment, and the fetor inhered to the wall.

"In the course of the first service under the Public Health Act in England, in cases where the occupiers were all struck with fever, in some instances all the occupiers were ordered to be removed, and the walls and ceilings to be lime-washed. But it occurred that the performance of this service was obstructed or neglected with respect to particular houses, and in those uncleansed houses, and in those alone, and with fresh occupants, the fever has broken out again—thus demonstrating the condition of the 'leprous house,' the walls of which were required to be scraped all around, and the inefficiency of the work of purification. Walls lathed, plastered and papered are even worse for such tenements. The laths rot, the size of the paper de-

composes, and the paper itself harbors vermin. The condition of some of the houses of this construction is horrible. To admit of the cleansing of the walls by lime-washing in various model dwellings, the walls have not been plastered or papered. In some instances, the sanitary orders are that the walls should be lime-washed twice, and in other instances as many as four washings a year are deemed necessary.

"The conclusions in respect to 'washable walls' are opposed to extensive observation of the higher and middle-class dwellings, which have soft, permeable walls, with lath and plaster, papered, which do not smell. But the cubic space in the better class houses is usually four times greater, occupied partially instead of constantly, whilst the lower class houses are occupied, night as well as day, by double the number of persons. In the first class of houses, however, on the occurrence of cases of scarlatina or the like, it is prescribed as necessary to re-paper them. Moreover, in larger rooms of the first-class houses, it is found that illness is at times occasioned by the decomposition of the size used for papering, and by arsenical and other materials used for paper.

"The condensation of moisture on painted walls, or on walls faced with quick conducting materials, in unoccupied rooms, is often confounded with transuding wet, and objected to as a cause of damp; but washable interior wall-facings have been provided for cottages which are not exposed to this inconvenience.

"The occupiers greatly dislike the bare brick walls provided in some model dwellings. In hospitals the evil is in great measure prevented by facing the interior wall with some hard and smooth surface, generally of the best non-absorbent and washable cement. As a principle, then, the surfaces of all interior cottage walls should be washable.

"Besides the evils arising from the absorbency of the animalized gases by walls of the common construction, there is the common evil of the absorbency and retentiveness of water or damp. In England the common bricks absorb as much as a pint or pound of water. Supposing the external walls of an ordinary cottage to be one brick thick, and to consist of 12,000 bricks, they will be capable of holding 1,500 gallons, or 6½ tons of water when saturated. To evaporate this amount of water would require nearly a ton of coal, well applied. A medium brick holds 12½ ounces of water; a piece of well-made cement of the same size only half an ounce, or a twenty-fifth part as much. Yet new constructions are made in ignorance or disregard of such comparative conditions, as also of relative economies, to the extent of six pence per cubic foot of space for cottages that are dry, as compared with one shilling per cubic foot of space for ornate cottages that are damp. The softer and more workable stones are of various degrees of absorbency, and are often more retentive of moisture than common brick. Professor Ansted states that the facility with which sandstone absorbs water is illustrated by the quantity it contains both in its ordinary state and when saturated. He states that even granite always contains a certain percentage of water, and in the dry state is rarely without a pint and a half in every cubic foot. Sandstone, however, even that deemed fit for building purposes, may con-

tain half a gallon per cubic foot, and loose sand at least two gallons. When water presents itself in any part of such material, it readily diffuses itself by the power of capillary attraction, by which it is observed on some walls in Paris it ascends thirty-two feet from the foundations. Walls of such absorbent constructions are subject to rising wet by capillary attraction, as well as to the wet of rain or storm. To guard against the driving wet on the coast, expensive external coverings, "weather slate," are used. But these do not stay the rising wet. Impermeable string courses are put in some walls to stay the rising wet, but they do not stay driving wet. This wet having to be evaporated, lowers temperature. Damp walls or houses cause rheumatism, lower strength, and expose the human system to other passing causes of disease. The majority of the bent figures in our villages are due to infliction of rheumatism from damp. An experienced traveler in England laid down a rule to avoid bed-rooms with northern aspects, which, having less sun upon them, were, when unoccupied, the most damp, and if the bed touched the wall, there was the most danger of a damp bed. To keep out the damp, an extra quantity of fuel is necessary. The evil is the greater with the poor, who are often obliged to leave their rooms without the fires which the more wealthy are enabled to keep up.

"The first lesson set in the model cottages erected by Prince Albert was, as stated, of an improved sanitary construction with hollow brick or pot walls, with glazed and impermeable and washable surfaces, should be adhered to. It is therefore proposed as the terms of a sanitary specification in respect to the wall (and the ceiling)—

"That it shall be constructed of a material of the first order as a non-conductor of heat.

"That it shall be impermeable to water and to gas.

"That it shall be washable inside and out.

"That it shall be of a material that shall not harbor animalcules.

"To which may be added this:

"That the facing shall be of a light, agreeable color.

"In considering the complete sanitary construction of the house, the window has to be taken into account.

"It is of sanitary importance to increase the light and sun warmth, by increasing the window space in houses, and especially in cottage dwellings. But if we do that with thin window-glass, we diminish warmth, and to that extent diminish the effect and the value of house shelter in cold weather. It is therefore suggested—

"That the windows shall be of such thickness and arrangement, that the retaining power, or the non-conducting power of heat, shall be equivalent in cold weather to the non-conducting of the outer walls.

". . . . Having got the house weather-tight, and damp-proof, and miasma-proof, with washable and non-absorbent walls, we shall, nevertheless, if we have them closed almost hermetically, have only placed the population in small crowded rooms, under a set of inverted receivers of vitiated and phthisis-producing air, and—if the crowding is intense—fever-producing air. It is therefore proposed, as most important heads of sanitary specification for ventilation, the construction shall be such—

"1. As to change the air of such living and sitting-room completely not less frequently than three times an hour.
"2. As to change the vitiated air for air that is warm as well as fresh.
"3. As to save more than one-third of the chimney heat, seven-eighths of which in the common constructions now passes away unapplied.
"4. As still to apply advantageously the radiant heat of the open fire-place.

"Those requirements are now attainable by simple yet inexpensive means, through a perfected invention of Captain Douglas Galton.

"The principle of the invention consists in surrounding a smoke flue, which may be of stoneware or of iron, with a fresh-air flue, the fresh air being taken from the outer air. The heat of the smoke flue expands the air in the fresh-air flue, and causes it to rise in a current, which is discharged—warmed—near the ceiling of the room, across which it spreads. It then descends and mixes with the colder and heavier air beneath, and it is carried with the current into the open fire-place, and is thence discharged as vitiated air through the smoke flue. The smoke flue, surrounded by a fresh-air flue, constitutes a pump, pumping into the room warmed fresh air in quantities proportioned to the warming power of the smoke flue, and the adjustment of the size and length of the fresh-air flue.

"There are objections to ventilating with dry heated air; but the late Dr. Parkes, of Netley, has made experiments which show that, at the rate at which air passes through the fresh-air flue, and the short time of its contact with the heated surface, it is carried into the room with its hygrometric condition very little altered.

"Another effect produced by the invention is the maintenance of an equable temperature in all parts of a room, and the prevention of draughts. . . . .

"A minor provision—having relation to ventilation—where gas is introduced into dwellings, is—

"That for every gas burner introduced into any part of the house, a separate channel shall be introduced for carrying away the products of combustion.

"This is an important sanitary provision, urgently advised by gas managers, who well know the nature of those products; but it is difficult and dangerous to carry away those hot air flues through the common timber floorings. But through floorings of concrete such channels may be conducted on first construction with comparative convenience and without danger.

"On the water-supply of dwellings for the wage classes, it should be required that—

"Water-supplies shall be carried to every floor by pipes, which, if of lead, shall be protected in the interior by composition preventive of any action of the metal upon the water.
"On each floor or landing there shall be provided a sink, with a waste or return pipe communicating with the house drain, and each such sink or waste pipe shall be so trapped as to prevent the escape of any vitiated air from the house drain or the sewer into the premises.
"The house shall be provided with a water-closet on the siphon principle, so shaped and provided with water as to be effectually self-cleansing, and connected with a house drain of such form, size and inclination as to be effectually self-cleansing throughout, and to remove at once from beneath the premises—to be so

trapped as to prevent the ingress of vitiated air from the sewer, in the event of accidental stoppages, and to be at all times free from foul smells.

"Accidental stoppages only are required, under proper instructions, to be provided for by flushing, inasmuch as where sewers are properly constructed, they are self-cleansing and are free from deposit, and there is no decomposition of stagnant matter, and no need of flushing, and but little need of trapping, except to ward off the consequences of accidental stoppages.

"The complete construction of the house will be such that if it be left clean, unoccupied for any time, it shall remain dry, free from any close, musty or foul smell, and shall be immediately habitable, without the need of fires, or of any special preparations for safe occupancy in winter or in summer.

"For the completion of the rudimentary sanitary provisions connected with dwellings, it is necessary to add other specifications to be made, not to architects or to house builders, but to the local authorities having charge of the local drainage works, viz.:

"That the sewers for the reception of all house drainage shall be constructed of such form, size and inclination as to be completely self-cleansing, and to remove constantly, and without leaving any deposit, the refuse discharged into the sewers, and without occasioning any need of flushing except for accidents.

"That all animal or vegetable matter removed from beneath the sites of houses, streets and towns, in suspension in water, shall be deposited on soil appropriated for its reception for vegetable production, and shall be deposited and applied usually within the day of its production, or before it can enter into any noxious stages of decomposition, or give off any noxious emanations.

"All this, with competent sanitary science, engineering may now accomplish.

"In respect to the surfaces of the footpaths and streets of towns, it ought to be provided that—

"Both the footways and the carriage-ways shall be covered with a surface impermeable to water and washable.

"Both footways and carriage-ways shall be regularly washed at stated intervals, and at such times, daily or weekly, as the state of the traffic may require.

"This may be done with an economy of clothes, as well as of furniture and goods, in houses and shops, under competent sanitary administration.

"This is conducive to the dryness of the urban atmosphere, to the purity of the air, by the prevention of puddles of decomposing refuse of all sorts, and to the cleanliness of the person, clothes and furniture of the inhabitants. . . . .

"The primary merits or defaults of sanitary science and art construction of dwellings, may be confidently tested after occupation by the smell, by dryness and freshness of smell when the occupants are out, by the absence of the bad drain smell, or of mustiness, damp and the foul wall smell; by "the dead man's smell" on the walls of rooms where there has been a prolonged retention of the dead; by warmth in winter and by coolness in summer. As are these primary qualities, so will very early be, in a great degree, the sickness and death-rates, especially amongst children and those who are much in the house."

SCHOOL LUNCHEONS.

Some philosophers have undertaken to trace the relation of cause and effect between the customary food of an individual and his character. Certain harsh systems of theology have been traced to the dyspeptic stomachs of their founders, and it has been asserted that many a poor fellow has danced upon nothing because the judge had a fit of indigestion. Leaving these abstruse speculations to the philosophers, I think it may be asserted without contradiction, that many a sturdy lad has been soundly breeched, and many a blooming maiden has received a "black mark," because of the cake and pickle upon which the teacher lunched, or because of the indigestibility of the toothsome sweetmeats dispensed to the innocents at the noon recess by perambulating merchants.

This reflection naturally leads to the subject of noon recesses and children's luncheons. Many can remember the time when a recess of two hours gave ample opportunity for leisurely disposing of a good dinner, and separated the day into two well-defined working divisions. But noon recesses of twenty minutes in the private schools to one hour in the public schools, each of them somewhat shortened by detention and disciplinary matters, have changed all this. Pupils living near the school go home on a run, eat on a run, and return on a run, while the others, from a brown paper or tin box, take a piece of bread and a bit of cake, which are summarily bolted that the play-spell may not be abridged. Did not boyhood possess, proverbially, the stomach of the ostrich, the ill results of this practice would be so evident as to compel a reform.

On the teachers' side, the result of these short recesses is equally disastrous. Having in their youth passed through this same discipline, the stomachs of many of them have reached that degree of sensitiveness that craves only highly-seasoned food. Cake, pickles and mince-pies are frequent in their lunch-baskets, to which, in many cases, is added tea strong enough to float the city debt. The result by two o'clock is a condition of nerves that the winking of an eye jars, and a turning of the head on the part of the pupil completely shatters. As a consequence, the majority of teachers believe in total depravity, and the predestination of a majority of their pupils to the abodes of wickedness.

It is, probably, too much to expect that the two-hour noonings may return. Local customs are in the way. The whole army of teachers and children would arise in opposition, and what man dare array himself against them? It seems to me that the evil may be largely mitigated, by providing a clean, cheap and nutritious lunch on the school premises. I speak now of public schools, where the attendance is large. To this end there must be a change in the character of many of the janitors. He must not be a broken politician, who looks upon the place as a reward for his devotion to his country. He must not be a foreigner, with the untidy habits of too many of the

new arrivals. He must not be so old as to be decrepit, nor so young that he may lack judgment and common sense. On the contrary, he should be quick in his movements, clean in his appearance, patient with children, endowed with common sense, and, above all, good-natured. Such a person can furnish a lunch of nutritious and palatable soup, a buttered roll, and a cup of coffee and milk, for the sum of five cents. *How* it is not our purpose to discuss. The details may be safely trusted to the kind of janitor described, as well as the charge of the bill of fare.

This lunch could be eaten leisurely, for no distance must be traveled under the hot sun of summer, or through the snows and rains of winter, to get it.

The lunch, by its digestibility, would restore the flagging energies of the body, and not add a fresh load to them.

Its cost would be less than what is now provided for the children. With tact it could be made popular. PHILO.

———, *September 1st*, 1877.

———o———

ONLY A BABY.

TO A LITTLE ONE JUST A WEEK OLD.

Only a baby,
'Thout any hair,
'Cept just a little
Fuz here and there.

Only a baby,
Name you have none,
Barefooted and dimpled,
Sweet little one.

Only a baby,
Teeth none at all;
What are you good for,
Only to squall?

Only a baby,
Just a week old;
What are you here for,
You little scold?

BABY'S REPLY.

Only a baby!
What should I be?
Lot's o' big folks
Been little like me.

Ain't dot any hair!
'Es, I have, too;
S'pos'n I hadn't—
Dess it would drow.

Not any teeth!
Wouldn't have one;
Don't dit my dinner
Gnawin' a bone.

What am I here for!
'At's pretty mean;
Who's dot a better right
'Tever you've seen?

What am I dood for,
Did you say?
Eber so many sings
Ebery day.

'Tourse I squall at times,
Sometimes I bawl;
Zey dassn't spant me,
'Tause I'm so small.

Only a baby!
'Es, sir, 'at's so;
'N if you only tood,
You'd be one, too.

'At's all I've to say;
You're mos' too old.
Dess I'll det into bed—
Toes dettin' cold.

—*Cincinnati Inquirer.*

ZYMOTIC DISEASES IN NEW YORK.

Abstract of Report of the Committee on Hygiene of the Medical Society of the State of New York, June 20th, 1877.*

Typhoid Infection of Drinking-Water.—Dr. E. V. STODDARD, of Rochester, presented certain questions bearing upon the subject, and cited facts which, seemingly, bear strong testimony as to their correctness. The statement of these questions in the form of propositions brings them most clearly forward.

PROPOSITION I.—The decomposition of animal and vegetable organic substances is not, alone, sufficient to produce typhoid fever; for the development of essential typhoid, a special germ or element is necessary.

PROPOSITION II.—The decomposition of animal organic substances is especially favorable for the development of the germs of typhoid fever, and especially is this the case with human excreta.

PROPOSITION III.—The pollution of water used for drinking and domestic purposes is one of the most fruitful sources of the development of typhoid fever.

In response to the question, "How does typhoid fever originate?" our first proposition offers a ready reply, and one which the daily accumulation of observed facts confirms. Two theories have been offered as explaining the development of this specific agent, the one holding that, to produce specific products, specific substances must be decomposed, and, to produce typhoid fever, the substances undergoing decomposition must be animal. The other claims that the origin of typhoid fever from decomposing substances can only occur when the products of such decomposition are mixed with, or contain, the specific typhoid poison. That typhoid fever is a specific disease is now generally accepted. It is true there are yet those who argue strongly for the theory that it can be produced by the decomposition of animal substances *de novo*. But carefully-conducted experiments have failed to corroborate this position, and in cases where outbreaks of this disease have occurred in unsanitary conditions and in the presence of decomposing organic matter, close observation has generally led to some starting point traceable to a focus of specific infection. The observation of every day is sufficient to demonstrate that the decomposition of organic substances, or of human or animal excreta, is not alone sufficient to produce typhoid fever. This is often observed in towns and cities with notably defective drainage and sewerage, where typhoid fever is very rare; and again, where want of cleanliness and abundance of filth exist in other cities, that there holds no constant relations between the prevalence of typhoid fever

* Continued from page 409.

and the unsanitary conditions. Yet in such situations the introduction of a single case of typhoid fever has been sufficient to give rise to an extensive endemic. We are thus forced to recognize that there is an element essential to the production of typhoid fever, in addition to filth and organic decomposition.

With this view of the continuous production of typhoid fever, the question at once arises as to the character of the substance, or substances, which act as a means of transportation of the specific exciting cause. Experience has clearly shown, that in other infectious diseases, especially in cholera, the specific poison occurs abundantly in the excrements of the patient. The same reasons as in cholera hold for seeking the poison of typhoid in the excreta.

In fresh typhoid evacuations its presence is not so evident; but if such dejections are allowed to remain in filthy surroundings, or especially when placed in the midst of putrescent or putrescible substances, the evolution of the poison seems to be certain and rapid. Thus observation indicates that, in the recent state, in order to become active, the germ needs to pass through a certain stage of development outside the body. It has also been observed that *soil* seems, at certain seasons, to afford conditions specially favorable for the development of the typhoid poison, and soil containing decomposing organic matter, and saturated with water, affords a welcome nidus for its development. The ease with which a well, or other supply of water, becomes polluted by surface drainage or leakage from sewer or privy, offers a ready explanation of the means of entry. The soil, permeated by water holding in solution or in suspension much organic matter, into which the germs of the disease may have found entry, becomes a focus for propagation, as well as a means of contamination of the wells sunk in it.

As a very striking illustration of the questions raised, the history of the "Hunter Street Well," of this city, is in point.

During the past year, the attention of our Health Board was attracted to the fact that, in a certain limited section of the city, typhoid fever was remarkably prevalent, with a decided immunity elsewhere. Examination limited it to an area of about five acres. We at once suspected some local cause, and a thorough investigation was instituted. In the centre of this district was situated a well, at the intersection of Hunter and Reynolds Streets. The surroundings of this well were extremely filthy. About thirty feet distant was a privy, with a vault which was not water-tight.

On opening it, its walls were covered with deposits from water percolating between the stones. The water of the well was clear and free from odor or taste.

The microscope showed no unusual amount of organic matter. Chemical analysis disclosed the presence of a considerable amount of the sodium chloride, but little else of importance. The presence of the sodium chloride pointed to sewage pollution, as proved to be the case.

To test the influence of the water upon those using it, it was decided to take a thorough census of all the families of this district, and ascertain the number of persons using the water; the number using that from any other source; the cases and character of illness, and

the deaths during the previous six months, noting such other facts as would throw light upon the subject. This was thoroughly done, and with the following result:

Eighty-seven families, consisting of 492 persons, occupy the district. Forty families, comprising 219 persons, *use water* from the well. Among those occurred twenty-three cases of typhoid fever and one of diphtheria during the period taken.

Forty-seven families, consisting of 273 persons, did *not* use the water; among these occurred only two cases of typhoid fever during the same period. Among those using the water, the ratio of sickness was one in every 9.12, among those not using the water one in 136.5, or fifteen times as much sickness from zymotic diseases among the families using the water. It was ascertained that the *first case of* typhoid in the district, during the time considered, *occurred in the family occupying the premises on which the well was located.* The well was immediately closed and *not another new case of typhoid* had *appeared* after two months, in this section.

These facts are exceedingly interesting, and point very directly to the conclusion:

First. That impure water alone did not produce typhoid fever, but only after a case had occurred in its immediate vicinity with probable infection. This is strengthened by the fact that only those using the water were sick, and the disease immediately disappeared on the closure of the well.

Second. That water yielding very moderate evidence of impurity to the senses, or by chemical or microscopical examination, by the *physiological* test is proven very dangerous.

Malarial Diseases of Putnam County.—Dr. T. H. Bailey, Chairman of County Society Committee, reports on the Croton Water-Works: They were constructed in 1835 or '36, by subverting the waters of the Croton river and carrying them by aqueduct into New York city. They were supposed at that time to have sufficient capacity for supplying New York for the next hundred years or more. Owing to the rapid increase in population, unforeseen demands upon the water-supply, together with an actual *diminution of the same*, it became evident, some fifteen or twenty years later, that measures would eventually have to be adopted whereby the supply could be increased during the *dry* portions of the year. Accordingly, in 1856, surveys were made, and fifteen sites located for storage reservoirs. About ten years after, work was begun on one of these at Boyd's Corner, in the town of Kent. It consisted of the building of a dam of solid masonry some 800 feet long across a mountain pass, through which flowed the west branch of the Croton river. This was destined to, and does now, in fact, cause the flooding of some 320 acres of land. In consequence of the destruction of certain roads, new ones had to be built around the margin of the reservoir. This necessitated the overturning of an immense quantity of earth, notwithstanding which, such was the nature of the soil and subsoil, that not a case of malarial fever, so far as I have learned, occurred among those working on these roads. Those working on the dam and living in the valley were not so fortunate, however. A great deal of deposit was disturbed to make room for the dam, and subsequently to form an earth hood on the upper side. And

again, the water was from time to time dammed back at different stages of the work, for the purpose of expediting the same, and in turn drawn off. To these causes I am inclined to attribute the malarial fever which existed to a more or less extent in that vicinity. In the fall of 1870, before the completion of the Boyd's Corner or Kent Cliffs reservoir, owing to a continued drought, the supply of water became so low as to threaten the city with a water famine. In this emergency, those in charge of the matter turned their attention to the beautiful lakes which lie scattered through our mountains, forming in many instances the head-waters of the different branches of the Croton river. The largest and most beautiful among the number is Lake Mahopac, which yearly draws to its shores a large number of the wealthier classes from New York, Brooklyn and other cities, in search of pleasure, rest and health. Without the slightest right or title, these lakes were tapped under the direction of the Department of Public Works, and drawn, in spite of all remonstrances, in some cases as much as fifteen or twenty feet. The result was as I predicted to the Chief Engineer of the Department of Public Works—the appearance of malarial fever in localities where, so far as I know, it had never been seen before. Many of the lakes have very abrupt and rocky sides. The drawing off of these lakes, aside from defacing the natural scenery, seemed to have had little or no effect upon the surrounding country. In several instances there were no inhabitants in the immediate vicinity of the lakes; I am not therefore able to judge what the effects might have been had the shores been peopled. The shores of Lakes Mahopac and Kirk, differ materially from most of the others. Those of the former slope gradually, reefs put out here and there, and swamps and low lands, together with an occasional flat extending some distance out into the lake, make up their general conformation. The drawing off of the water left an extensive surface exposed around the borders of the lake; this was augmented by the uncovered shores of the three islands contained therein. Kirk Lake, like Mahopac, has a gradually sloping bottom, in some places composed of mud, and at the upper end a swamp extends back for a half mile or more. With the water at ordinary height this is flooded to a more or less extent; but when lowered some fifteen or twenty feet, as it was in 1870, the poison-hatching surface of the swamp was left fully exposed, and its effects manifested by producing malarial fever among the inhabitants in that vicinity. The same effects were produced at Mahopac. Dr. Murdock gives a very clear and interesting account of the "malarial epidemics" from which Cold Spring has suffered. He speaks of two severe ones. The first, beginning about 1838 and lasting four or five years, was caused by an attempt to reclaim a marsh from the river just below the village.

"The marsh was enclosed by dykes and the water removed by pumping. This procedure was followed almost immediately by the severe epidemic referred to, in which people were attacked by the hundred, and which finally resulted in the destruction of the dykes *vi et armis* by a large force of men from the Parrott foundry. After the restoration of the tidal flow over the marsh, the malaria gradually subsided. Not long after this the dykes were restored, but with the introduction of flood-gates and thorough drainage of the enclosed land, which was

not attended by any outbreak of fever. The health of the community steadily improved, until within two or three years all traces of malarial fever had disappeared. From that time not a case originated here, as far as my knowledge extends, for an interval of about twenty-five years, during which time the village was in all respects one of the healthiest in the State.

"The present epidemic began in 1871, and still continues, although less severely than a year or two ago. The etiology of this presents many problems, and the causes seem to be partly general and partly local. In view of the occurrence of malarial fever over such a wide extent of country during the past few years, and in places where it was unknown before, I am inclined to look for certain atmospheric conditions of which we have no way at present of taking cognizance, but which favor the development of malaria during given years at points which are ordinarily free from it. In considering the local causes here, the following facts appear. The reclaimed marsh, which was, beyond question, the cause of the first epidemic, remains in precisely the same condition, as far as I can discover, in which it has been during twenty-five years of perfect freedom from disease, and it is difficult to see how it can now give rise to any such amount of malaria. I am aware of but two or three changes which have occurred in the physical condition of the locality within such time as to suggest them as possible causes. One is a diminished rain-fall extending over a series of years immediately preceding the epidemic, so that the streams and springs have been very much affected. Another is the steady disappearance in the amount of timber standing in the adjacent country. A third change is in the condition of the large coves which are situated immediately adjoining the reclaimed marsh, and which are shut off from the river by the track of the Hudson River Railroad. Although there is a broad bridge in the course of the embankment, and free tidal flow in and out, yet the coves have been gradually filling up of late years, and exposing more and more surface to the air. At many points along the river where this occurs I have known malarial fever, and it seems to me not an impossible or improbable cause.

"My belief is that if, in the construction of a railroad along a river after the manner of the Hudson River Railroad, the company were obliged, whenever a cove was cut off from the river by the line of road, to put a bridge at both ends of the cove, instead of in the middle, as is usually done, and throw out a short stone pier from the lower border of the upper bridge and upper border of the lower one, at such an angle as to direct a free current each way through the enclosed cove with every change of tide, it would be kept from filling up, and thus a possible cause of malarial fever be averted. . . ." From the village of Carmel, situated in the township of the same name, I have received the following report from the pen of Dr. J. Q. Adams:

"The land area of the township is about twenty-two thousand acres. The natural drainage is good. The soil is gravelly loam mostly, with hard-pan subsoil. Until within ten years malarial fever of a remittent type has prevailed, and I am fully satisfied soil saturation was the almost universal cause. There is very little marshy land in the township. Fever as often occurs on the highest hills as in the valleys, and it is remarkable that in these high localities the soil is saturated

to the very surface, except in dry seasons. The saturation is due partly to the hard-pan subsoil and partly to want of ditching. I attribute the subsidence of malarial fevers to the ditching of the land of late years by the farmers for agricultural purposes. Of zymotic diseases we have our share, and notwithstanding we have a population of a little less than 3,000, we are by no means free from the evils of overcrowding. During an epidemic of diphtheria which has prevailed for the last two months in a certain section of our town, the cause was directly traceable to overcrowding and filthy habits of living. I can cite two instances where families numbering eight or ten members respectively were all living and sleeping in rooms of not more than one thousand cubic feet capacity. One of these rooms stood over a cellar in which there was water standing most of the year; the other, without a cellar, stood over a saturated soil. Other local causes of diseases are, chiefly, too close proximity of privy vaults, cess-pools, dwellings, barn-yards, pig-pens, and springs or wells from which the families are supplied. Sewage about our dwellings is very imperfect—in fact, almost entirely neglected. . . . ."

Dr. N. B. Bayley, of Brewster's village, has forwarded to me an interesting case of water-poisoning, where a whole family were affected from drinking the water from a well which, during a stormy season, had received the drainage of a barn and out-houses situated some fifty feet from it.

———o———

Living without Food.—It is true that many diseases, all the world over, arise from eating too much. But it is possible, on the other hand, to eat too little; and we doubt whether many could maintain a healthy existence on the meagre diet of such medical philosophers as the celebrated Cornaro. How long one could contrive to live without eating anything at all, is a question of which few will be inclined to undertake the practical solution. Unfortunately, it has been solved over and over again in the case of many an accident and many a deed of cruelty. Without something to eat or drink, man will not live beyond a few days, or at most a week. Access to water, however, makes a great difference. There is a well known case of an Ayrshire miner who lived twenty-three days, buried in a coal mine, without swallowing anything but small quantities of a chalybeate water sucked through a straw. He had the advantage of being shut up in a contaminated atmosphere, which, by diminishing nervous sensibility, lessened the cravings of hunger.

Berard quotes the example of a convict who died of starvation after sixty-three days, but in this case water was taken. Cases of alleged fasting longer than this are certainly due to exposure. The insane appear to bear fasting better than those in their sober senses, and in some morbid conditions of the body nourishment may certainly be done without for a surprising length of time. Animals have an advantage over man, so far as living without food is concerned. Rattlesnakes exist many months without eating anything, and retain all their vigor and fierceness; and many creatures voluntarily spend four, five or six months in every year without eating or drinking. The tortoise, bear, dormouse and other animals retire at their seasons to their respective cells and hide themselves—some in caverns of rocks and ruins, others dig holes underground, while some get into woods and lay themselves up in the clefts of trees.—*Cassell's Magazine.*

"SANITARY REGULATIONS" OF PUTNAM COUNTY, N. Y.

CARMEL, PUTNAM COUNTY, N. Y., *August 10th*, 1877.

DR. M. A. BAILEY, Secretary Putnam Co. Medical Society,

DEAR SIR: In compliance with your request that I should prepare an informal report upon Dr. A. N. Bell's visit to Carmel and lecture before our Society at its last Annual Meeting, I submit the following:

At a meeting of the Putnam County Medical Society, held on the third Tuesday of April last, a resolution was passed to have a lecture upon some medical subject before its members and the public on the evening following our next Annual Meeting, to be held on the third Tuesday of July next. A committee of three was accordingly appointed to make the necessary arrangements.

Dr. A. N. BELL, editor of THE SANITARIAN, was applied to, to deliver the lecture on some subject connected with sanitary regulations. He consented to give an informal discourse, on condition an opportunity were first afforded him of seeing something of our necessities. To this end I had the pleasure of meeting Dr. Bell at the railroad station on the morning of the day of our Annual Meeting, and riding about town with him three hours upon a tour of inspection. The doctor was freely communicative on sanitary subjects, and full of pleasing and instructive anecdotes. One I must relate. It was concerning Dr. Joseph H. Bailey, now a retired surgeon, U. S. Army, living at Kent Cliffs in this County.

Dr. Bell said that during the epidemic of yellow fever which prevailed at Fort Hamilton and vicinity, in the autumn of 1856, Dr. Bailey was stationed at Fort Hamilton, and while at his post administering to the necessities of the sick and dying, both in garrison and town, he fell a victim to fever himself. Dr. Bell (who had recently resigned from the U. S. Navy) had been previously called in consultation by and with Dr. Bailey, and was now called upon to take charge of Dr. Bailey himself, and, for a time, of his post duties. Dr. Bailey's condition grew desperate, and, in Dr. Bell's opinion, would surely have died, if kept in the garrison. He must be removed, and at once. Dr. Bell had no authority to remove him, but there was no time for red tape. He must act without authority. He accordingly procured the service of a trusty army man, and a covered market wagon. Into this a mattress was placed, and Dr. Bailey upon it. The curtains were then fastened down to the rails, and left open at the top. The driver was then ordered to mount, and drive straightway to the residence of a brother of Dr. Bailey in New York—down Hamilton Avenue, Brooklyn, over the ferry and up Broadway to Fourteenth Street—where the excellent wife of Dr. Bailey was, as near her husband as she was permitted to go.

"What shall I say," inquired the driver, "if a policeman asks me

what I have got?" "Tell him a *sheep*, and *drive on*," said Dr. Bell. The driver did drive on, and an hour afterward met Dr. Bell at the designated place, to assist in the transfer. To which bold act, and the tender nursing of a devoted wife, Dr. Bailey doubtless owes his long and useful life.

Dr. Bell remarked, as we rode along, that people somehow were prone to select a good site for a house and build a very bad house on it, or a very bad site and build a good house on it. Only a few seemed to form the exception by associating the two necessary conditions of a healthful residence—both a good site and a good house.

He had noticed, as we rode along up the Croton Valley in the cars, that the general arrangement about the dwellings was, the house low down in the valley, with the well in front or at the side of it, and the pig-pen or privy a few feet back, and a little higher up the hillside than the well. The result must necessarily be a constant percolation of poisonous animal matter into the well. This arrangement was a very prolific cause of zymotic diseases, of which typhoid fever, diphtheria and scarlet fever were among the most common.

I invited the doctor to go with me to our county almshouse, and he very cheerfully consented. The first thing that attracted the doctor's attention there was a hen-house, five or six feet square, standing less than ten feet from two springs or shallow wells, and on a little higher ground. The door of the little hen-house was open, and appearances told that it had not been cleaned out for years.

Inquiring of the keeper what use was made of the waters of the springs, we were told that they were used by the paupers for kitchen and drinking purposes.

Entering the house, we found some of the apartments exceedingly filthy and poorly ventilated. At the time of our visit the paupers were at dinner. The meal consisted of bread, potatoes and boiled pork. Dr. Bell examined the bread, and thought it was part barley and part rye, and a little sour. The children under fifteen and over five years of age, eighteen in number, were all at one table. The keeper told us that none of the children had ever had school advantages, no provision having been made by the county authorities to sustain a school. Passing to the cellars, of which there were two, one was a regular pest-hole—unused, damp, unventilated and dirty. The keeper here remarked that the cellar was overrun with rats. The doctor said that was a good thing, and recommended their protection and propagation. The other cellar was clean and dry, but poorly ventilated. The inmates of the house numbered about fifty.

From the county house we drove toward Carmel, and the doctor soon espied a new house standing, perhaps, a hundred and fifty feet from the road, and twenty or twenty-five feet above it. He remarked that there was a good place for a house, and he would like to see what kind of a house there was on it. We called, and the lady of the house very cheerfully showed us to the cellar. It was clean, but not very well ventilated. Around the whole circumference of the cellar was a drain eighteen inches deep, and filled with small stones. This drain discharged its water by a tile drain to the surface about fifty feet from the house. The walls were of stone and cement. The bottom was earth, and there was no covering over the drain. From

the bottom of the cellar were growing myriads of fungi, and, especially where the light was strong, green mould was abundant.

Dr. Bell inquired of the mother, who was showing us the premises, if they had had any sickness in the family since they built that house. She replied that a year ago last winter they had lost a little boy with membranous croup. The doctor explained to her that the damp, poisonous air of the cellar had been confined by closing the windows in the early part of winter, that the upper part of the house had been kept heated, and the result was, that evaporation of the cellar moisture, with the results of the decaying green mould, had been going on permeating the whole house, and carrying the elements of disease to her boy. The doctor's words, in this instance, fell upon good ground. The owner of that house, and the husband and father of the family occupying it, has since been to me, inquiring, "What shall we do to be saved?" He wants to know how he can make his cellar dry, and says he is going to make the effort next fall. At two o'clock, P. M., we reached the Smalley Hotel, Carmel, and Dr. Bell was introduced to the members of the Putnam County Medical Society, who were in the midst of their morning session. I have seen Spanish and Mexican amigos meet, but I have seldom seen a more cordial meeting than that between Dr. Bell and Dr. Joseph H. Bailey. They embraced, and I really thought they were going to kiss, but they didn't. The hand-shaking was vigorous, and a glow of manly, heart-felt affection lighted up the old veterans' faces.

The Society adjourned to dinner, and Dr. Bell had a right good social sitting with his old friend, Dr. Bailey.

At eight o'clock in the evening the Society met a good audience at the M. E. Church. Dr. M. A. Bailey made some very appropriate introductory remarks, and introduced Dr. Bell to the audience. Dr. Bell said that he supposed the audience expected from him a formal lecture, but he should make a social talk of it.

At the beginning, he remarked, Putnam County, in regard to sanitary regulations, so far as he had been able to examine it, pointedly reminded him of the late Mr. Greeley's account of the town of Greeley—the town in the far West which had been founded and named in his honor—whose people had invited him to make them a visit and lecture. On arrival at the depot, just at night, the brakeman called out "Greeley! All out for Greeley!" And out he got, carpet-bag in hand. He looked up the track and down the track, and then across to the right, and to the left. Not a bit of a town could he see. But there was an immense place to put one. He then proceeded to speak in a conversational way of some of the causes of disease, and how to remove them. This was a subject that concerned every one. Nearly one-half of all the diseases that occurred in this county were preventable, and nearly one-fourth of all the deaths that occurred were the result of bad, unsanitary conditions. Typhus and typhoid fevers, diphtheria, scarlet fever, membranous croup, and many other diseases, were caused by the sewage of houses, barn-yards, pig-pens, privy vaults, and damp, filthy cellars, contaminating the drinking-water. He mentioned, also, the use of water by families from milk springs, where the dairy milk is placed to cool. Milk in this way mixed into drinking-water decomposed after a time, and was a fruitful source of disease.

He dwelt particularly upon the uncleanliness of living apartments and insufficient ventilation. Cleanliness, ventilation and proper sewerage were three essential conditions to health. He gave some valuable instructions in regard to building cellars and draining our premises. Cellars should be thoroughly drained, and then a water-proof bottom made in them; ventilate them well, and you had good cellars. Common cement did not make a good cellar bottom. It was too porous, and would admit the passage of foul air and water through it. Asphaltum was the best material for cellar bottoms, and these could be made at a very moderate expense. The system of soil-drainage he recommended was the inexpensive tile drain, with which most farmers were familiar, for farm purposes. They should use the same for health.

After the close of the lecture, a vote of thanks was tendered Dr. Bell for his very entertaining and instructive lecture. Dr. Bailey, in turn, offered the audience the thanks of the Society for their presence and good attention to the lecture. He hoped that when another year rolled around, we should be able to invite them to come together again on a like occasion. This closed the exercises of the evening, and the audience was dismissed.

J. Q. ADAMS, M. D.

How Eggs are Preserved by a New Process.—The egg traffic of this country has risen to an importance which few comprehend. The aggregate transactions in New York city alone must amount to fully $8,000,000 per annum, and in the United States to $18,000,000. The perishable nature of eggs has naturally detracted from their value as a standard article of diet. The peculiar excellence of eggs depends on their freshness. But lately the process of crystallizing has been resorted to, and by this process the natural egg is converted into a vitreous substance of a delicate amber tint, in which form it is reduced seven-eighths in bulk compared with barreled eggs, and retains its properties for years unimpaired in any climate. In this form eggs may be transported without injury, either to the Equator or to the Poles, and at any time can be restored to their original condition by simply adding the water which has been artificially taken away. The chief egg desiccating companies are in St. Louis and New York. No salts or other extraneous matters are introduced in the process of crystallizing, the product being simply a consolidated mixture of the yolk and albumen. Immense quantities of eggs are preserved in the spring of the year by liming. Thus treated, they are good for every purpose except boiling. It is a common fraud for some dealers to palm off eggs so treated as fresh, so that imposition is easily practiced. In the desiccating process, however, the difference becomes apparent, as from four to five more limed eggs are required to make a pound of eggs crystallized than when fresh are used, and eggs in the least tainted will not crystallize at all.

THE MASSACHUSETTS STATE BOARD OF HEALTH.*

The succeeding annual reports of the Massachusetts State Board of Health have come to be looked for in this country with an interest scarcely second to that which has for many years obtained in regard to the reports of the medical officer of the Privy Council and Local Government Board, in England; and, indeed, they are of fully equal importance in practical utility; for, notwithstanding they are the work of the chosen officers of one State only, they comprehend pioneer work of universal interest, and the truths which they work out, constitute the landmarks for an intelligent following throughout the country. The report before us, for the year 1876, opens with the usual summary of proceedings, suggestions to the legislature for additional enabling enactments to meet new issues, and a brief of the *Special Reports* which follow:

1. "The Pollution of Streams;" "Disposal of Sewerage and Drainage for Health," by Charles F. Folsom, M.D., Secretary of the Board; with Chemical Examinations, by Prof. Wm. Ripley Nichols, and with a "Map of the Nashua River Basin," by Edward K. Clarke, C. E.

2. "Sewerage: its Advantages and Disadvantages, Construction and Maintenance," by E. S. Chesbrough, C.E., of Chicago, Ill.

3. "The Sanitary Condition of Lynn," by J. G. Pinkham, M.D.

4. "Registration of Deaths and of Diseases," by Charles F. Folsom, M.D., Secretary of the Board.

5. "The Growth of Children," by Prof. H. P. Bowditch, M.D.

6. "Diseases of the Mind," by Charles F. Folsom, M.D., Secretary of the Board.

7. Health of Towns: "Diphtheria in Lynn," by J. G. Pinkham, M.D.; "Diphtheria in Salem," by A. H. Johnson, M.D.; "Diphtheria in Lowell," by F. Nickerson, M.D.; and "Notes on Typhoid Fever in South Dennis," by C. M. Hulbert, M.D.

It would be hard to find *seven* subjects for special investigation and report, of more practical importance to the progress of Sanitary Science, than those above enumerated. 1. "A single river basin has been examined by the Board during the year, and that has been selected which offers the most topics for consideration, being situated in two States, being polluted at many points, and illustrating most of the important features that would be likely to govern legislation, if any should be thought advisable." It is unfortunate for the health of the people, that our legislators, as a rule, are the last to recognize the pollution of streams, or to appreciate the dangers arising therefrom. And the thrifty voters of woolen, cotton and paper mills will laugh at

* Eighth Annual Report of the State Board of Health of Massachusetts, January, 1877. Boston: Albert J. Wright, State Printer.

the calamities of the people just so long only as they may be permitted to elect representatives who will know nothing of the "waste liquor" from the dye vats, loaded with urine and dung; the offensive dirty grease, animal refuse and filthy soap-suds from woolen mills; the slimy filth which exudes from the gutter rags of paper mills, filled with every conceivable abomination, mixed with the arsenical analyne and other bleaching poisons used in their preparation; the washings and scrapings, and the alkalies and acids of tanneries and leather-board mills; the drainage of gas works; and the common pollutions of farm yards, fowl houses, and privy vaults: all combine to poison the water-courses and water supplies, not in Massachusetts alone by any means, but in every State in the Union. It is through the education of the people at large, only, by the dissemination of such information as this, that legislative bodies may be made to recognize the sanitary interests of the people.

Of the "Disposal of Sewage," for populous neighborhoods especially, so much has been said and written, so many mistakes have been made and so many lives have been lost in this country in consequence of its neglect, that the people are alive to the emergency, but for the most part ignorant of the means of meeting it. We here have a concise presentation of the best experiences at home and abroad, with diagrams and maps illustrating the various practical methods, and a summary of conclusions in regard to both the sanitary and economic aspects of the question. To the effects of bad drainage on health—the third and last sub-division of Dr. Folsom's first paper—comparatively little space is given, because, probably, the literature on the subject is deemed to be abundant, and because, moreover, the Massachusetts State Board of Health has, heretofore, largely contributed to it. Several recent examples of fatal endemics, more or less extensive, including the pollution of *watered milk*, and the most recent deductions in regard to the *filth* conditions of Yellow Fever are given. "In the city of Buenos Ayres, during the year of the cholera epidemic (1867), one-twentieth of the population died; in 1871, the yellow fever year, more than one-tenth perished, even counting the 60,000 who fled from the town. There has been a careful investigation of the causes of this fearful mortality, and *filth* has been shown to be so far responsible for it, that a distinguished English engineer has been engaged to carry out a complete system of sewerage and water supply. In the language of the report,* the works of Drainage and Sewerage, so actively prosecuted at the present time, are destined to radically remove the infection, which experience has demonstrated to be one of the most fruitful causes of disease and death. During the past year, Savannah has had a similar experience, and very largely at least from similar causes." Our own observations in Vera Cruz, Tampico, Port Royal, St. Domingo, Port au Prince, and other places on the Mexican and Central American coasts, the West Indies, the coast of Africa and adjacent islands, and infected vessels, fully verify the correctness of the conclusion that yellow fever is, in relation to *filth*, a congener of cholera, typhoid fever, dysentery, diphtheria and other well recognized "effects on health of bad drainage."

2. Sewerage: "Its Advantages and Disadvantages, Construction and

* Vital Statistics of the City of Buenos Ayres. By G. W. Rawson, M.D., Delegate to the International Medical Congress at Philadelphia, 1876.

Maintenance"—comprehending the differentiation of localities, conditions and uses in relation to the material, form, etc., by one of the most successful sanitary engineers in the country, is a highly interesting paper of much practical utility to all municipalities who have the subject under consideration.

3. "The Sanitary Condition of Lynn," with a topographical map showing ten years' mortality from consumption, pneumonia, typhoid fever, scarlet fever, diphtheria and croup, and cholera infantum, in relation to natural and artificial conditions, is a sad lesson of criminal mortality; such, however, as might be furnished, if there were only equally good observers, from most towns of the same size throughout the United States. Notwithstanding the general death rate of Lynn (about 20 per 1,000), is not regarded as very high, more than one-fourth of all who die are killed by zymotic diseases, and upwards of nineteen per cent., or nearly one-fifth of the whole, are killed by consumption. One-half of these latter, at least, and all the former, or nearly one-half of the whole, may be fairly considered as preventable. Dr. Pinkham's conclusions, although with special reference to Lynn, are general in their application:

"In certain streets and sections, there exist many removable causes of disease, and as a consequence a large mortality. The healthy portions suffer, in a measure, with the unhealthy. Infectious diseases, which find a permanent abiding place amidst the filthy privies, sink-holes and pig-sties of the latter, spread at times into the former, no amount of cleanliness and care forming an effectual barrier to their entrance. . . The death-rate of the healthiest and best conditioned districts is thus rendered greater than it should be. . . The aggregate loss from sickness and death may be said to fall upon the community as a whole. . . . An organized and determined effort to diminish this loss would be evidence of wisdom." He next summarizes the needs of the city, and urges the establishment of an intelligent and effective Board of Health.

4. The Registration of Deaths and of Diseases, and of such legal enactments as will secure it, are vigorously urged as among the most important measures requiring legislation. While Massachusetts is credited with being far in advance of her sister States, excepting, perhaps, her nearest neighbor, Rhode Island, in this particular, the Secretary of the Board plainly shows that the returns of the *causes* of death, at least, are exceedingly defective; while considerable evidence is adduced showing that "*all* the deaths are not recorded." As a remedy, a law is urged for the registration of physicians, and for the exclusion of certificates of death from all who are not registered as competent to practice medicine, similar to a law which now obtains for the cities of New York and Brooklyn, which is deemed to be especially valuable as a measure for the restriction of contagious affections.

5. "The Growth of Children" is the outcome of a study in which the author has been engaged for several years. It embodies the results of measurements of the height and weight of about 24,500 school children of Boston, with a record of the nationality of the parents, and the comparative rates of growth of the two sexes. The measurements are tabulated, and the results expressed by means of curved diagrams and plates with marginal readings in figures. In the comparative rate of growth of the two sexes, it appears that the

greatest annual increase in height occurs in girls at twelve and in boys at sixteen years of age, while the maximum increase in weight is for boys at the same age, and for girls one year later than the maximum increase in height.

Both boys and girls of American parentage are found to be, almost without exception, taller and heavier than children of the same age and sex whose parents are of other nationalities. "Owing to the fact that emigrants to this country belong almost wholly to the poorer classes of the communities from which they come, it is evident that in this city (Boston), children of American parents must belong to families of greater average wealth, and live therefore in greater comfort than children whose parents were born in foreign countries. It is important, therefore, to inquire what effect comfort and misery have upon the growth and development of the human race." And here follow comparison with researches of Quetelet, Villermé, Cowell, Gould, Baxter and others—but with but little evidence in regard to children of different nationalities—researches of this kind having been chiefly confined to adults with regard to normal types. By the summary of results it appears that until the age of eleven or twelve, boys are both taller and heavier than girls of the same age; for the next two or three years, girls surpass boys of the same age in both height and weight. Boys then acquire and retain a size superior to that of girls, who have generally by this time completed their full growth. Children of American-born parents are, in this community, taller and heavier than children of foreign-born parents, a superiority which seems to depend partly on the greater average comfort in which such children live and grow up, and partly upon differences of race and stock. Pupils of American parentage at selected schools are superior in weight and height, to the generality of boys of American parentage attending the public schools. . . The relation of weight to height in growing children is such that at heights below fifty-eight inches, boys are heavier than girls in proportion to their stature. At heights above fifty-eight inches the reverse is the case.—The subject is one of very great interest in both its educational and sanitary bearings. Successful physicial education is now everywhere regarded as essential to successful mental education and we are not able to see any reason why annual examinations of physical condition by measurement, such as those practiced by Dr. Bowditch, should not be regarded as of equal importance with examinations in regard to mental acquirements. The rate of growth in school-life, and at different periods, should be recognized as a factor in the allottment of studies in the school course.

6. Dr. Folsom's paper on Disease of the Mind presents many important considerations bearing upon the care of the insane, which will doubtless attract deserved attention from State authorities and those who have the care of Insane Asylums, It comprehends a historical sketch of the progress made in the treatment of the insane from the earliest times. Numerous facts are cited, showing the great strides made in the care and treatment of the insane in recent years, and full meed of praise is awarded to many leading spirits in this country, from Rush, the "American Sydenham," down to the present time, for the part they have taken in this branch of medical progress.

Moral and hygienic measures are now everywhere taking the place of the severe restraints of the past; and more and better attendants

are everywhere being followed by corresponding improvement in results.

7. The Health of Towns for the most part consists of a summary of replies to inquiries by the Board, from different portions of the State, with special reference to the prevalence of zymotic diseases, and measures for their suppression; and the necessity for local Boards of Health. It ends with a tabulated summary of mortality statistics of 130 cities and towns—of which Gardener, with a population of 2,000, presents the highest rate—27 per 1,000; and Marlborough, with a population of 3,800, the lowest—10.52 per 1,000.

———o———

Encaustic Tiles.—Among the new *old* objects eminently worthy of consideration for their sanitary bearings are *tiles*. They rank among the most ancient material for roofs, inside walls and floors. And while the kind used for roofing have been superseded by more modern, though by no means more durable and protective, inventions, the ancient *majolicas*, which were chiefly used for interior decorations, still remain inimitable. These, the "*majolicas*," are so called from having been found in greatest perfection among the ruins of Majorca. The nearest modern approach to them are manufactured by Minton, Hollins & Co., Staffordshire, England. Those made by this firm are of two kinds, plain or paving tiles, and encaustic, or inlaid tiles. Encaustic is derived from two Greek words, *en kaiein*, which signify to burn in. These tiles are made by filling depressions in the unburnt compressed clay with coloring materials, and then burning the clay and colors together.

The plain tiles are uniformly colored throughout before being burnt, every desirable color and shade being imparted. The patterns of the inlaid tiles admit of an elegant and countless diversity. By combining different shapes, such as squares, hexagons, octagons, etc., in various subdivisions, with the plain and inlaid, magnificent varieties of artistic effects are produced. The plain and encaustic tiles are for floors, hearths, etc.; and the glazed, enameled and majolica tiles—which have a more polished surface—are for wainscoting, mantels, bureau and table tops, and other cabinet furniture. They are equally well adapted to both interior and exterior decorations in architecture—in the flooring of vestibules, corridors, balconies, churches and other public edifices—*particularly to hospitals;* the absorbent, drying qualities of the under or back surfaces, being an admirable protection against external dampness, while their adamantine polished face renders them superior to any kind of mortar, wood, metal or stone. They are cleaner than any other flooring or side walls, handsomer than any carpet, less costly, neater and more durable in both texture and beauty; and in these days of terror at conflagrations, their incombustibility is an important advantage. The agents for these useful and elegant goods in the United States are Messrs. Miller & Coates, 279 Pearl Street, New York, who laid the handsome tile flooring of the United States Capital Extension. The Minton tiles were also used to inlay the ceiling and floor of the covered portion of the Terrace in Central Park, and they are largely used in Trinity, St. George's and St. Thomas' Churches, Trinity Chapel, Temple Emmanuel, and other places of divine worship in this and other cities.

RUDOLF L. C. VIRCHOW.

Simul et jucunda et idonea dicere vitæ.

VIRCHOW'S career has been a remarkable one—in some respects it has been extraordinary. A profound and original thinker, a scientist of acknowledged ability, the founder of a new school in pathology, a distinguished and eloquent teacher, a prolific and brilliant writer, he has proved himself an able statesman, a skillful political organizer and a leader possessing both energy and tact. He is equally remarkable for his æsthetic culture, and his acquirements in archæology or in music would make the reputation of many an inferior man. To write even a sketch of his life would be to review the history of German politics, as well as to analyze the various changes that have taken place in the condition of medicine, during more than a quarter of a century, and that the most unsettled, the most changing period, because it has been the most progressive and the most fruitful in results. His life has been one of unusual activity, of extraordinary excitement. He seems to have had two separate existences, the one, generally, considered incompatible with the other—the turmoil and excitement of politics, and the quiet and retirement of scientific pursuits. But even his scientific career has not been a quiet one, it has been essentially aggressive, for the construction of new theories involved the destruction of old and cherished notions that had taken deep root in the public mind. He says himself, in his introduction to the seventieth volume of his Archives: What anxiety it has cost to uproot the doctrines of the Humoral pathology, buried amidst the ruins of thousands of volumes, and to erect in its place a system based on a knowledge of the tissues, one that would form the true basis of pathology and therapeutics!* He has waged an incessant warfare to break down false theories, to uproot false principles; he has labored to place the foundations of pathological science on a basis at once broad and deep, and so firmly and solidly bound together, that they will resist all attempts to uproot them in the future. His proposition has been that: "Pathology must be a self-existing science."†

Virchow was born, October 13th, 1821, at Schivelbein, in Pomerania. His earlier studies were made at the Gymnasium of Köslin, where his career was as remarkable for the energy and perseverance with which he devoted himself to literature, as for the brilliancy of his intellectual qualities. His medical studies were pursued under the direction of John Müller, who ever afterwards remained his warm friend. In Berlin he entered as a student the "*Medic.-chirurg.-Friederich-Wilhelm's-Instituts*," and, during a brilliant course, distinguished himself by the originality of his investigations, which foreshadowed his future career. From this institution he graduated in 1843, receiving the degree of Doctor of Medicine and Surgery.

* "Welche Mühe hat es geköstet, die durch tausend Bande der Sprache und der populären Ueberlieferung gesicherte Humöral-pathologie zu stürzen, und an ihrer Stelle eine einfache, auf wirkliche Anschauung und auf unmittelbaren versuch gegründete Wissenschaft von den Geweben und ihrer Bedeutung für Pathologie und Therapie aufzurichten"!

† "Dass die Pathologie eine selbständige Wissenschaft sein muss." Archiv, loco citato.

He soon became assistant physician, and later prosector in the Charity Hospital, and subsequently *privat-docent* in the University of Berlin. Here he found every facility for pursuing the study of his favorite science, and, in company with his friend Reinhardt, devoted himself to the study of *pathology* and *pathological anatomy*. The fruits of these studies were first given to the public in the "Archiv für Pathol. Anatomie und Physiologie," which he, with Reinhardt, founded in 1847. This journal he has edited and published without assistance since the death of his associate, in 1852, and he has made it one of the most valuable medical periodicals published in the German language. The establishment of this journal has been one of the prominent events in his life. He says of it himself: "It was certainly a hazardous undertaking for two young and almost unknown writers, without co-workers, to found a journal that would admit only original articles of undoubted merit."* His purpose was, "to lay the foundation for more exact experimental investigation, to wage war against the indiscriminate mingling of voluntary rationalism and base empiricism, and to give a more enlightened direction to pathological investigations. . . We attack *à priori* speculation," he says; "we throw aside systems and take our position on the basis of experiment."

The same year he received a commission from the government to visit Silesia, for the purpose of adopting the most efficient measures to prevent the spread of typhus in that country. The results of his observations on the so-called "Hunger Typhus," were published in Berlin, in 1848, under the title: "Communication on Typhus in Silesia" (Mittheilungen über den oberschles. Typhus).

The Bavarian government invited him, in 1852, to investigate the causes of a famine then prevailing in the Spessart. This he analyzed in a treatise, "*Die Noth im Spessart.*"

In 1859 the Spedalska, a species of leprosy, raged with unusual severity in some parts of Norway, and the King of Sweden invited Virchow to investigate the cause of the epidemic. His observations on this subject, "Ueber Morbus Spedalska," were subsequently given to the public.

On the 10th of July, 1848, assisted by his friend Leubuscher, he founded the "Medicinische Reform." In the first number he expressed the hope that: "All who felt an interest in the advancement of our beautiful science, the most beautiful department of human knowledge, would take an active part in aiding and encouraging the publishers."†

He wished, also, "to remove the dissensions, the spirit of isolation, and indifference to the common interests of the profession, . . . and to excite once more among its members, unity, enthusiam and associated efforts."‡

*"Es war, gewiss, ein Wagestück dass zwei junge, fast unbekannte Leute eine Zeitschrift begründen wollten, die nur Originalartikel bringen sollte, und für welche kaum Mitarbeiter existirten."

† "Dass alle Diejenigen welche es mit der Entwickelung unserer schönen Wissenschaft, dem schönsten inbegriff menschlicher Erkenntniss gut meinen, die Kräfte der Herausgeber durch thätige Theilnahme stärken und stützen werden."

‡ "Wohin die Zersplitterung, die Theilnahmlosigkeit, die Isolirung führen, davon giebt der Zustand unserer Medicin ein sprechendes Zeugniss; versuchen wir jetzt einmal wohin Einheit, Enthusiasmus und Verbindung uns bringen können."

The enterprise did not succeed, and on the 29th of June following he wrote, in the last number: "Medical Reform has had its day, and Sanitary Reform is the question of the hour."*

He advocated alike "sanitary reform and social reform;" he believed that to preserve the health of the people, especially of the productive classes, was second in importance only to the furnishing to them their daily bread. "Medical reform," he continued, "as we have understood it, was the reform of science and of society. We have developed its principles; they will pursue their course without the existence of this journal. But we will be ever ready to labor in their interest and do battle in their cause."†

In the Easter term of 1847 he was regularly installed in the University of Berlin, as Professor of Pathological Anatomy, a position which he really held since the same period of 1846.

In 1848 he entered the field of politics, and pursued this new career with the same enthusiasm, the same indomitable energy that he manifested in the pursuit of medical science. In politics he has generally been regarded as favorable to democratic principles, although he does not appear to sympathize with extreme radicals. He founded the *Democratic Club*, and soon became distinguished among his associates for brilliant and effective oratory. He was elected a member of the Diet, but could not take his seat in that body because he had not yet attained the age required.

In 1849 he was removed from his chair in the University of Berlin for purely political reasons, and his journal was suppressed; but, scarcely was he free from Berlin, when the chair of Pathological Anatomy in the University of Würzburg was offered to him. He accepted it, and entered on the discharge of his duties with such earnestness and enthusiasm, that the University soon became known as the *Würzburg School—(der Würzburger Schule)*.

He undertook many very important scientific investigations during his connection with the Würzburg University, with a view to effect some reforms in medical teaching; he directed his attention particularly to the cellular tissue. Here, too, he founded the first *Medico-Physiological Society—(die Physicologisch-Med.-Geselschaft)*.

The great and well-deserved reputation he acquired in Würzburg no doubt compelled the authorities to recall him to Berlin, and, in 1855, the Baron Manteuffel invited him to return to the chair he formerly filled in the University. He resumed his place, and the reputation of the Berlin University soon stood higher than it had ever been before.

Virchow is the founder of the so-called school of *Cellular Pathology*. This system was fully set forth in his great work, "Lectures on Cellular Pathology" (Vorlesungen über Cellularpathologie in ihrer Begrundung auf physiol. und pathol. Gewerbelehre), published in 1859, in Berlin. This work has been translated into nearly every European language, and in 1862 reached a third edition. In the same year he published the first volume of his "Lectures on Pathology" (Vorlesungen über Pathologie).

* "Auch die Medicinische Reform hat ihre zeit gehabt und das vornehmen der öffentlichen Gesundheitspflege geschah zu seiner zeit."

† "Die Medicinische Reform die wir gemeint haben war eine Reform der Wissenschaft und der Geselschaft. Wir haben ihre Principien entwickelt, sie werden sich ohne das Fortbestehen dieses Organs, Bahn brechen. Aber jeder Augenblick wird uns beschäftigt finden für sie zu arbeiten, bereit für sie zu kämpfen."

In 1859 the liberal party was again in the ascendant, and Virchow was elected a member of the Municipal Council of Berlin (als Stadtverordneter für Berlin). He was a member of the Prussian Assembly (Mitglied des preus. Abgeordnetenhauses) for the district of Saarbrucken from 1862 until 1867, when he was elected a member of the same body from Berlin. From the outset he distinguished himself by a most vigorous and successful campaign against the corruption and flagrant abuses in the department of Municipal Police. His energy, eloquence, and parliamentary tact soon caused him to be looked up to as the leader of the opposition, and his parliamentary career has been remarkable and brilliant. During the resistance made by the Chambers to the encroachments of the royal authority, he was always in the front rank; and it was he who, in 1863, proposed, and successfully carried through the house, the draft of an address to the King which accused the ministers of having violated the Constitution. The energy and activity of his opposition to the government was such that, in 1865, the Chancellor Bismarck sent him a challenge to fight a duel. This seems to have been a very inconsiderate act on the part of the Chancellor; yet it ended as happily as the duel between Moore, the poet, and Lord Jeffrey, in which the seconds drew the balls. This Byron calls:

> "That ever glorious, almost fatal fray,
> When Little's leadless pistol met his eye."
>
> *English Bards and Scottish Reviewers.*

We may be sure that the Chancellor dreaded the fervid eloquence, the indomitable energy and boldness displayed by the leader of the liberal party, more than he would a shower of bullets.

Virchow has constantly and firmly resisted the tendency to centralization and military rule in Germany. He accepted the new Constitution, reserving, however, the right to oppose it, if in future it should be so interpreted as to favor any tendency to despotism, which he had so long and zealously opposed. The events of 1866 again placed the liberel and progressive party, of which he was the leader, in the minority; but, after the annexation of the other German states to Prussia, the liberals became stronger, and Virchow renewed his struggles against the strong tendency to centralization and military rule which was again manifested. Among the most notable acts of his political life was his effort, in 1869, to effect a general disarming of the leading powers of Europe; but a bill which he introduced into the Reichstag for this purpose was defeated, on the 5th of November, by the very decisive vote of 215 to 99.

Virchow's contributions to sanitary science have been numerous and valuable. He says, however, that very many doctors take no interest whatever in *sanitary* subjects, and that some look on them even with disfavor. In 1848 he published his Report on Typhoid Fever in Silesia, in which he studied both the sanitary and the social condition of the people. In 1848 and 1849 he wrote on cholera. It is well known that he and Pettenkofer have differed in regard to the ætiology of this disease. Virchow does not hold the same views with regard to the influence of ground water with his distinguished rival. In 1856, in an article in the *Gazette Hebdomadaire*, he said: "It would, in my opinion, be considering the subject from too narrow a stand-point, to regard the predisposing cause as due to a single principle, and to make no allowance for atmospheric, hygienic and other

conditions, as well as for individual predispositions." * Yet their differences would not seem to be irreconcilable, for, in 1869, he said in regard to the same subject: "I hope that we are approaching still nearer to each other." †

In 1862 he published his "Four Lectures on Life and Sickness."‡

In 1865 appeared his "Studies of Trichinosis," and in 1866 it reached a third edition.§

In 1865 he published his essay on "The Education of Women for their Station in Life."‖

In 1869 he published his essay: "Some of the Influences of Schools on the Health of Children in after Life."¶ In 1870, "The First Sanitary Efforts of the Berlin Aid Society."**

"The Influence of the Natural Sciences on the National Life of Germany," is the subject of a carefully prepared treatise published in 1871.†† In the same year he published a paper on "Lazar-houses and Barracks;"‡‡ and in 1873 a valuable paper on "The Mortality in Berlin."§§

His best known works on sanitary subjects are his essay on the "Sewerage of Berlin"‖‖ and "Sewerage or Scavanage."¶¶

This proposition he subsequently proposed to modify so as to read Sewerage *and* Scavanage, because he considered that sewerage was absolutely necessary for all large cities and towns having an abundant supply of water; for small towns, scavanage is the only practical method. His last work of magnitude is on the "Cleaning of Berlin and its Water-supply. A Report of the Commission appointed in 1867 to study the sanitary condition of the city."***

The complete Report, of which this is but an abstract, is an exhaustive one in nine parts (Hefte).

Quatrefages, the ethnologist, in his work, "La race Prussienne,"

---

* "C'est à mon avis, envisager la question d'une façon trop exclusive, que d'attribuer à un seul principe, la cause prédisposante, et de ne tenir aucun compte de l'atmosphère, de l'hygiène et de l'état corporel des individus, ainsi que des autres conditions dans lesquelles se trouve leur demeure."

† "Ich hoffe, dass wir uns auf diesem Wege einander nähern werden." Canalisation oder Abfur? Page 70.

‡ "Vier Reden über Leben und Kranksein."

§ "Die Lehre von den Trichinen."

‖ "Ueber die Erziehung des Weibes für seinen Beruf."

¶ "Ueber gewisse der Gesundheit nachtheilige Einflüsse der Schule."

** "Der erste Sanitätszug des Berliner Hulfsvereins."

†† "Die Aufgabe der Naturwissenschaften im nationalen Leben Deutschlands."

‡‡ "Ueber Lazarethen und Baraken."

§§ "Ueber dil Sterblichkeit Berlins."

‖‖ Ueber die Kanalisation von Berlin. Gutachten der konigl. wissenschaftlichen Deputation für das Medicinalwesen, nebst einem Nachtrage. Mit zusätzlichen Bemerkungen. 1868.

¶¶ "Canalisation oder Abfuhr? Eine hygieinische Studie."

*** Reinigung und Entwässerungs Berlins-General-Bericht über die Arbeiten der Städtischen gemischten Deputation für die Untersuchung der auf die Kanalisation und Abfuhr bezüglichen Fragen, entstattet, von Rudolf Virchow, Mitglieder der Stadtverordneter-Versammlung, mit Tafeln und Tabellen. Berlin, 1873.

maintained that the Prussians were of Finnic origin. This led, in 1871, to a warm discussion between him and Virchow. Of late years he has devoted much attention to the subject of Archæology.

Virchow published, in 1858, an eloquent oration on his friend and preceptor, John Müller, and in 1865 a similar one on Schönlein, besides a series of popular lectures, among which was one on "Göethe as a Scientist," and another, "Ueber Nahrungs und Genussmittel." He has been for years a member of the organization of teachers of the Berlin Workingmen's Society, and President of the Society for Advancing the Condition of Families, etc. He is also President of the German Anthropological Soctety (Vorsitsender der Deutschen Antropologische Geselschaft). He was elected an honorary member of the Royal Medical Society of London in 1856, and in 1857 a corresponding member of the Academy of Sciences of Paris. We have made the merest allusion to his works on sanitary and other subjects. The Archives are rich in such literature; some of the ablest writers of the present day have been trained in that school. We close this notice with the concluding sentence of his article introducing the *seventieth volume* of the Archives, entitled "On the Position of Scientific Medicine." (Ueber die Standpunkte in der wessenschaftlichen Medicin. May, 1877.) "Many scientists, whose earlier articles were published in these Archives, have since established archives under their own direction. We wish them every prosperity. It is only in honorable emulation, in constant study and by severe labor, that the *strong* can preserve their *strength.*"*

His public career has been a singularly disinterested one, and it may well be said of him, with *Menedemus:*

Me. . . . . "Tantumne ab re tua est otii tibi,
Aliena ut cures, ea quæ nihil ad te attinent?"

His life justifies the reply of *Chremes:*

Ch. "Homo sum: humani nihil a me alienum puto."
Terence, Heautont, Act I, Scene 1.

* "Mancher Forscher dessen Jugenarbeiten das Archiv enthält, hat später sein eigenes Archiv eröffnet. Mögen sie Alle freundlich begrüsst sein! Denn nur im Wettstreite, in steter Uebung pflegen auch die Kräftigen ihre Kraft ungeschwächt zu erhalten."

T. P. C.

———o———

Hanging Baskets and Window Boxes for winter are now in fitting season, and none we know of are so beautiful as the "Clay Goods" of Stewart & Co., 269 Pearl Street, near Fulton, New York. They have them in imitation of rustic woodwork, statuettes in every variety of fancy work. To stock them, they should first be lined with moss, with a little soil attached. Place in the centre a showy plant of upright habit, well started. Fill up the surrounding space with plants of a *kindred nature*—such as are suited to shade and moisture: ivies, ivy geraniums, linaria, panicum, balms, gold and silver vinca ferns, etc. For windows with southern exposure to a bright sunshine a wholly different classification will be required: consult a gardener.

Editor's Table.

CONSULTATIONS ON SANITARY SUBJECTS.

In order to meet the growing demand for information on all questions connected with the preservation of health, the **Editor of The Sanitarian** has removed his residence from Brooklyn to Garden City, L. I. His purpose in making this change is to devote himself more exclusively than hitherto to **consultations on Sanitary subjects**, such as: Water supply, drainage, the disposal of refuse, building sites, to seeking out the causes of disease and preventing them, and to the establishment of healthy surroundings, general and domiciliary, public and private. He will be at his **Office, 82 Nassau Street, New York, Fridays, from 3 to 4½ o'clock.**

For other hours and places by **special appointment.**

Written applications will be promptly answered.

All communications should be addressed:

A. N. Bell, M.D., Editor of The Sanitarian,
New York, P. O. Box 1956.

The Public Health.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,079,396—4 wks. end'g Aug. 18.	1469	2510	30.24	39		36		55	20	31	51	27	2	22	949	303	140
Philadelphia, 850,900—4 wks. end'g Aug. 25.	756	1448	22.12	56	1	23		33	3	11	11	56		4	294	153	52
Brooklyn, 528,000—4 wks. end'g Aug. 25...	690	1159	28.33	28		47		42	3	8	12	7		12	403	108	45
St. Louis, 500,000—1 wk. end'g Aug. 25....	74	158	16.43	4						1	1	1		1	14	16	11
Chicago, 460,000—4 wks. end'g Aug. 25....	550	808	22.83	25		7	11	42	8	7	11	16		2	231	58	19
Baltimore, 350,000—4 wks. end'g Aug. 25...	436	725	26.92	14			41	22		3	5	30	1	1	163	85	23
Boston, 363,000—4 wks. end'g Aug. 25....	368	725	26.51	27			9	3		2	11	10		2	263	96	16
Cincinnati, 280,000—4 weeks end'g Aug. 25	191	379	17.95	30	1	4		3	2	1	6	8		5	97	50	39
San Francisco, 300,000—month of July....	163	417	16.67	27	1	39				4		11		7	19	54	23
New Orleans, 210,000.....																	
Washington, 160,000.....																	
Pittsburgh, 145,000—month of Aug.....	301	469	33.64	34	29	52		9		5	25	6		3	10	26	15
Newark, 126,000.....																	
Providence, 103,000—month of Aug.....	79	180	20.9	7		12					4	6		1	56	19	4
Milwaukee, 123,000—month of Aug.....	116	179	17.46	6	9	3	10			2		4			17	21	8
Rochester, 70,000.....																	
Richmond, 75,000—4 wks. end'g Aug. 25..	88	151	25.5	3		2			1		6	10			34	12	7
New Haven, 60,000—month of Aug.... . ..	45	78	15.6	3		3	7				1	1		1	8	8	2
Charleston, 57,000—2 wks. end'g Aug. 11..	23	62	28.28														
Toledo, 50,000—month of Aug.....	54	82	19.65	5		1	1				1	1			23	6	8
Mobile, 40,000—month of July.....	25	68	20.4	6							1	1		1	8	9	3
Dayton, 36,000—month of Aug.....	13	36	12.	2		3						3			1	4	
Nashville, 27,000—month of Aug	31	73	32.04	1		12	3			5					13	7	2
Wheeling, 28,000—month of Aug.....	14	29	12.42	.		1	1				1	2			5	3	1
Buffalo, 170,000.....																	
Knoxville, 13,000—month of Aug.....	4	15	13.84	1											4	4	2
Paterson, 40,000—month of Aug.....	54	90	27.	2		13			1						19	9	3
Petersburg, 20,000—4 wks. end'g Aug. 25..	19	46	29.9	1							1			2	7	9	
Selma, 8,000—month of Aug.....	14	24	25.16	1								1			9	1	1
Elmira, 26,100—month of Aug.....	17	28	16.71	2								1			2	3	
Yonkers, 18,000.....																	
Memphis, 45,000—month of Aug.....	57	148	37.24	5							2			1	33	14	2
Detroit, 115,000.....																	
Syracuse, 60,000—month of Aug.....	38	76	15.2	3		3	2								24	9	4
Reading, 40,000—6 months end'g June 30.	193	450	22.5	.													
Sacramento, 21,000—month of July.....	17	43	24.57														
Minneapolis, 44,000—month of Aug.....	25	46	12.54	2		2			1			3			16	3	1

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

Foreign Health Statistics. — United Kingdom of Great Britain, during six weeks ending August 11th, 33,420 births and 19,486 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 13,934. The mortality from all causes was, per 1,000—in London, 20.5; Edinburgh, 18.33; Glasgow, 21.16; Dublin, 22.33; Portsmouth, 18.16; Norwich, 18; Wolverhampton, 21.66; Sunderland, 19.33; Sheffield, 18; Birmingham, 20.83; Bristol, 18.5; Liverpool, 23.83; Salford, 24.16; Oldham, 23.16; Bradford, 19.5; Leeds, 19.33; Hull, 19.83; Newcastle-upon-Tyne, 19.66; Leicester, 23.66; Manchester, 24.16; Nottingham, 20.83. Other foreign cities at most recent dates, per 1,000—Paris, 24; Rome, 24; Vienna, 20; Brussels, 23; Berlin, 45; Hamburg, 27; Calcutta, 19; Bombay, 55; Madras, 109; Amsterdam, 21; Rotterdam, 18; The Hague, 24; Christiana, 22; Breslau, 27; Buda-Pesth, 45; Turin, 23; Alexandria, 54; Copenhagen, 22; Munich, 38; Naples, 26.

Cincinnati.—Annual Report of Health Department for 1876. A lucid report of neglected laws and the usual consequences.

"The law creating a Health Department in our city," the Health Officer remarks, "empowers that Department 'to create and complete an accurate system of registration of births, marriages, deaths and interments occurring in such corporation, for purposes of legal and genealogical investigations, and to furnish facts for statistical, scientific, and particularly for sanitary inquiries.' To enable the Department to make such registration, the act requires that 'all such physicians, professional midwives, clergymen and all persons authorized to solemnize marriages, undertakers and sextons, shall report to the Board of Health all births, marriages and deaths occurring within the city limits of such city,' etc."

Notwithstanding, in an estimated population of 265,000, the number of births reported for the year was but 5,413, or at the rate of 20.43 per 1,000 of population; and of marriages only 2,463—116 less than in 1875. Deaths are presumably all reported, and for the year numbered 5,710, being an increase of 306 over the preceding year. Besides which, there were of still-births 344. Excluding these, the ratio of mortality for the year was 21.55 per 1,000 of population; 2,017, or 35.32, were of the zymotic class, and of these 929 died of small-pox. Altogether, during the last six years, the deaths from small-pox amount to 3,245.

The Health Officer cogently inquires of the Common Council: "In view of that great loss and damage to life, health and material prosperity, can any measure tending to avert such results be deemed too burdensome or harsh? And yet the honorable Common Council have had before them for some time, without as yet any action on it, an ordinance intended to confer more specific authority on this Department in dealing with this destructive pestilence. The proposed ordinance, probably, does not contain a single clause that may not be found in the enactments in force in some of the cities of our country; and why it should be regarded with so much indifference, if not actual opposition, it is difficult to understand. Until the necessary legislation shall be had, no end to the ravages of this disease can be seen; and the material interests of the city, as well as others, will continue to suffer."

Consumption killed 723, being the largest number ever returned in one year, and exceeding the average for the five previous years by nearly 94. "The mortality from this disease seems to be steadily, and not slowly, increasing."

From diarrhœal diseases 463 died; pneumonia, 422. Of the total number of deaths, 2,678, or 46.9 per cent., were of children under five years of age. Of the causes of death in general: "Many . . . were referred to causes exceedingly unsatisfactory."

Garbage disposal, soil and water pollution, insufficient sewerage, and slaugh-

ter-houses, are all subjected to intelligent criticism, and shown to be dangerous to the public health. Following the consideration of these subjects, the Health Officer concludes his report with a summary of recommendations and suggestions relating to various subjects: the keeping and fattening milch cows and hogs near dwellings; intramural market gardens; factory nuisances, particularly smoke; the ignorance of midwives; filthy street cars, etc., etc., are all intelligently and forcibly presented, as common conditions dangerous to health and life.

The Public Schools of Cincinnati—as a factor of ill health in the community—having been pressed upon the attention of the Board by the Health Officers, Professor J. B. Hough was employed "to make such surveys of the school buildings, and chemical analyses of the air therein, as should establish clearly and fully their actual sanitary condition." He commenced his investigations in June, and continued them until the end of the year. The importance of Hough's report requires more space than we can now spare for it; it will be noticed more in detail in next number.

Richmond, Va.—Annual Report: Births, Marriages and Deaths for 1876. "We estimate the population of the city at the middle of the past year, 75,000; whites, 42,830; colored, 32,170. Death-rate per 1,000 of entire population, 21.98. Of the whites, 17.36; colored, 28.13." Of the total numbers of deaths, respectively—whites, 744, colored, 905—there were of the former, under five years of age, 302 (31 per cent.); of the latter, 446 (49.3 per cent.) Total from zymotic diseases, 421. The chief causes of death were: Consumption, 227; diarrhœal diseases, 177; pneumonia, 83; whooping-cough, 72; croup, 72; heart diseases, 80; convulsions, 62; meningitis, 35; apoplexy, 35; typhoid fever, 34; diphtheria, 32; enteritis, 29.

Births recorded (including 184 still-births), 2,121. Ratio to population, 1 to 38.71. The proportion of still-births to those born alive, one to ten: of whites, one to eighteen; colored, one to seven.

Marriages recorded, 545.

Street-cleaning, etc., has been under the direction of the Board of Health, and is pronounced satisfactory. Ashes have been used for filling in, garbage removed beyond the city limits, and sweepings sold to the farmers.

The city seems to have been unusually free from nuisances of every kind, the water good, and health ordinances generally well observed.

Petersburg, Va.—Annual Repor for the fiscal year ending June 23d. Estimated population, 20,000. Total deaths from all causes, 506. Zymotic diseases, 114. Chief causes: consumption, 76; diarrhœal diseases, 57; infantile convulsions, 16; congestive fever, marasmus, heart diseases and apoplexy, each, 13; typhoid fever, 11. Still-births, 43: white, 12; colored, 31. The number of still-births among the colored, being 3 to 1, is attributed to incompetent attendance.

The mortality among the colored, generally, is nearly twice as great as among the whites, and attributed to the want of proper appreciation of sanitary science.

Mobile.—Annual Report for 1876. Total mortality, 1,120—28 per 1,000. 335, or nearly one-fourth of the entire mortality, was from consumption (147), pneumonia (87), measles (65) and whooping-cough (36). From zymotic diseases, 252—diarrhœal diseases, 75; typhoid fever, 21; congestive fever, 10; remittent fever, 10. The most perplexing and dangerous nuisance the Board have to do with is night soil, not being able to secure a dumping ground. Much gratification is expressed with the efficiency of quarantine in protecting the city from yellow fever and small-pox.

Disinfection in New Orleans.—No reports since March. But by the newspaper press, and by a paper begun in the last number of the *New Orleans Medical*

477 "Disinfection in New Orleans" No Reports since March. But by the newspaper press, and by a newspaper begin in the last Number of the Journal.

and Surgical Journal, we notice a new departure in disinfection. At the meeting of the Board of Health, July 19th, Dr. Joseph Jones offered the following resolution:

"That the President of the Board of Health of the State of Louisiana be authorized to establish the necessary regulations for the systematic employment of *gas-lime* as a disinfectant and antiseptic in the streets, gutters and canals of the city of New Orleans during the months of May, June, July, August, September and October."

This resolution was supported by Dr. Jones in the submission of an elaborate chemical analysis of the *gas lime* of London and Edinburgh, in comparison with, and apparently, in his judgment, showing its superiority to other disinfectants.

A little more than a year ago, Aug. 2d, 1876, Mr. John Beevor, Medical Officer of Health for North Notts, etc., called attention to this substance as "an efficient and cheap disinfectant," in a brief note to *Public Health* (vol. v., p. 128.), not far from the time when Dr. Baxter was engaged with Dr. Burdon Sanderson, in his exhaustive experimental paper on Disinfectants for Report No. VI. (1875) of Medical Officer Simon, of the Privy Council and Local Government Board. But Dr. Baxter's attention seems not to have been arrested by it.

On the efficiency of disinfectants in general, Dr. Jones is at decided variance with Dr. Baxter.

As a mere *drier*, gas-lime may be efficient, but of all other properties essential to an efficient disinfectant, it is devoid to a degree altogether too feeble to commend it to general use. "It is essential to bear in mind," Dr. Baxter remarks (l. c.), "that *antiseptic is not synonymous with disinfectant power* . . . When the thorough disinfection of a mass of solid or liquid matter, through which a contagium is disseminated, is impracticable, we should guard against giving a false security by the inadequate employment of artificial means. It is probable that all contagia disappear sooner or later under the influence of air and moisture, and that the absence of these influences may act a preservative. When, therefore, we cannot advantageously supersede the natural process of decay, we must be sure that we do not hamper it by the injudicious use of antiseptics."

Cleanliness, dryness and ventilation, can never be supplanted by disinfectants —these latter appropriately come in only when the former have been effectually applied. And we very much fear that the vigor with which Dr. Jones is urging the use of *gas-lime* for the preservation of the health of New Orleans will have the effect of diverting public attention from more efficacious means.

Literature.

Sanitary Engineering* is, unquestionably, one of the most considerable works of the kind hitherto published. "Without affecting a technical knowledge of either medicine or chemistry," the author prefatorily remarks, his "object has been to place before the engineering student the character of information which will qualify him for sanitary duties, being much impressed with the conviction that until all those who are charged with the *execution of works* upon which the public health depends, fully appreciate the principles which guide the Medical Officer in his opinions and reports, and comprehend

*A Series of Lectures given before the School of Military Engineering, at Chatham, 1876. By J. Bailey Denton, F.G.S., M. Inst., C. E.—Author of "Sanitary Works"; "Storage of Water"; "Village Sanitary Economy"; "The Progress of Land Drainage in Great Britain;" "The Farm Homesteads of England," etc.

In Divisions: I. Air; II. Water; III. The Dwelling; IV. The Town and the Village; V. Disposal of Sewage. 8vo., pp. 422. Elaborately Illustrated.

The work is appropriately dedicated to the memory of Edmund Parkes, M.D., F.R.S., etc. London: E. & F. N. Spon, 48 Charing Cross. New York: 446 Broome Street, 1877.

the data which govern the chemist in his analyses and deductions, they will be placed at a great disadvantage, and cannot entirely command the confidence of the public."—The great difficulty has hitherto been, in the progress of public works, especially in the United States, engineers, as a rule, have taken no cognizance whatever of sanitary conditions. Even in the water-supplies, in the sewerage of cities and towns, and in the projection of road-ways and streets —in order to obtain the requisite grades —embankments and causeways are constructed, water dammed up and marshes created, without any thought of contemporary drainage, regardless of the influence of such conditions on the public health.

Architecture is eqdally at fault. Conditions of site and soil are ignored. Public buildings and private houses alike are constructed without any attention whatever to the mephitic gases likely to be evolved, or to the needful preparation of foundations to keep out soil moisture. Ventilation and light are provided for not at all, or as subordinate conditions to the arrangements of chancels, platforms, pews, desks, sittings and closets. Plumbing and gas-fitting are left to the conveniences of chance spaces and crevices, and ordinarily conducted by mechanics who have no knowledge whatever of hydraulics and pneumatics.

Towns and villages are springing up all over the country, under the auspices of factory proprietors and "select men," who are blind to the dangers of foul streams, the proximity of springs and wells to privies, piggeries, fowl-houses and farm-yards. And farmers there are, a multitude of them, thrifty in everything but health, who fail to recognize anything but dollars in the cattle-yards and manure heaps under their windows. Clergymen, judges, lawyers, professors and teachers, eloquent and learned in all the tenets of their various callings, sacrifice their health and lives, as well as the health and lives of those committed to their care, in an humble dependence upon ignorant and careless mechanics—sanitary knowledge not having entered into their curricles. Like the idler of the sinking ship, it was none of his care, the sailors would see to that. It is true there are health authorities in some places, whose special business it is to protect the health of the enlightened communities which have established them, but they are usually inefficient in proportion to the progress of public works conducted under the auspices of political organizations. Besides, private houses and many public ones—such as churches, schools, court-rooms, assembly halls, asylums, prisons, etc.—are the special care of owners, tenants and trustees, who claim, and ordinarily exercise, exclusive rights until explosions come. Then, when the invited mischief arrives, whether in the form of flame, flood or devastating disease and death, none cry more loudly for help; the Health Officers to the rescue! Sanitary inspectors, who before had the doors slammed in their faces, who were looked upon as intruders on private rights, are now appealed to for safety, or censured, it may be, for not bidding defiance to private rights—such as poisoning our neighbors. But want of space forbids a more extended sketch of the multitude of evils which a knowledge of the work before us would avert. While Health Officers and engineers will find in it a fund of practical knowledge for which they have daily use, the information it gives is no less useful to other professional men, or to general readers. The work is copiously illustrated with plates, cuts and diagrams of plans of water supplies, sewerage disposal—for cities, towns and country houses—hydraulic machines, tanks, water-closets, ventilators, manholes, lampholes, flushing arrangements, gullies, etc., etc. We know of no work so well calculated to make the reader intelligent on the best means of promoting both public and personal health.

The Sanitary Condition in City

and Country Dwelling Houses,* a paper which attracted well-merited attention before the American Public Health Association, and the New York Public Health Association last year; and

Village Improvements and Farm Villages,† which first appeared as contributions to Scribner's and the Atlantic monthlies, are two admirable little manuals for general circulation. They are both appropriately illustrated with cuts and diagrams, showing the practical utility of the knowledge conveyed. Both author and publisher deserve the thanks of the public for this admirable adaptation of necessary sanitary knowledge to the popular style of general literature, no less suited to public and Sunday-school libraries, than to household readers. The more of such books, the less of diphtheria, typhoid fever, dysentery and their congeners everywhere.

Nurse and Patient, and Camp Cure ‡—reprinted from Lippincott's Magazine, like the two little books of Col. Waring above noticed—contains a whole volume of useful practical knowledge, suited to every condition of life; for persons who sicken and die without feeling the need of a nurse are very few, and the more to be pitied.—And for busy people, those who have no time for recreation, who look upon the country stroll or camping-out as idle practices—but who sooner or later find time to be sick—and who do all their reading by snatches, this little book is especially commendable. It need only take up the time of the city car ride or ferry crossing, and it will be sure to yield a good profit on all the time invested in it. Such works are great improvements on physic, and sad is the taste of those who do not prefer them.

Toner Lecture, V.§—Readers will not fail to recall previous notices of the "Toner Lectures," instituted by Joseph M. Toner, M.D., under the auspices of the Smithsonian Institution.

The one now before us, like those which have preceded it, is the result of much original research and diligent investigation of a subject of great interest to practitioners, and with special relations to hygiene—although this is not considered otherwise than comprehended under the general condition of "complications and sequels of the continued fevers": complications, we presume to think, equally common to an impaired state of the physical constitution, from whatever cause, and strikingly illustrated by Dr. Corbally's contributions to THE SANITARIAN on *Deformities and their Relation to Hygiene*. Hence these "sequels of the continued fevers" are wonderfully suggestive of the habitual standard of health of those who are born and bred under unsanitary conditions and surroundings. The lecture is scarcely less valuable for its suggestiveness in this regard, than for the clearness with which it elucidates a more exact knowledge of the relations of practical surgery to that state of the system which is, in particular, the result of continued fever.

Books Received.—The Jukes; Montgomery's Report of Committee on Public Hygiene and State Medicine; Southard's Water-Supply; Trader's Presidential Address to Medical Association of Mo.; Parker's Heredity as a Factor in Pauperism and Crime; Transactions of Medical Society of New Jersey.

---

* By George E. Waring, Jr., Honorary Member of the Royal Institute of Engineers of the Netherlands, Consulting Engineer for Sanitary and Agricultural Works, etc. 12mo, pp. 145. New York: D. Van Nostrand.

† By the same author. 12mo, pp. 200. Boston: James R. Osgood & Co.

‡ By S. Weir Mitchell, M.D., author of "Wear and Tear," "Fat and Blood," etc. 12mo, pp. 73. Philadelphia: J. B. Lippincott & Co.

§ On the Surgical Complications and Sequels of the Continued Fevers. By W. W. Keen, M.D., Philadelphia. Smithsonian Miscellaneous Collections. The Toner Lectures: Instituted to Encourage the Discovery of New Methods for the Advancement of Medicine. Washington: Smithsonian Institution.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. NOVEMBER, 1877. No. 56.

THE FAULTY MENU OF BOARDING-SCHOOLS.

By H. P. FOWLER, M.D.

Said a wise physician to me a few months since, "I don't know what to do with my daughters. Thus far they have been taught at home, but now they are old enough to complete their education away from their parents; and I know of no boarding-school, city or country, through which they can pass without coming out invalids. Educational institutions are faulty in a hygienic point of view, one great trouble being here"—tapping his stomach. Having heard the same opinion expressed before by several eminent physicians, and entertaining nearly the same sentiment myself, I was led to investigate still further upon the subject, and have come to the conclusion that this deplorable state of affairs is wholly unnecessary, and, therefore, most blameworthy.

Many persons have an idea that those who do not perform manual labor require but a small quantity of food, and that it is of little or no consequence whether it be of a decidedly nutritious quality. If such misguided individuals had the care of victualing a dozen young Irish women, who were cooks, washerwomen, chamber-maids, etc., they would provide an abundant supply of strong, substantial, nutritious food, "for they needed something to work on;" but for a dozen young lady students, "who didn't do anything but study," the menu would be of the lightest, most delicate, most innutritious quality, and in such quantities that Dotheboys', or rather Dothegirls' Hall would instinctively rise to our lips.

This is all wrong; for the brain derives nourishment from what we eat, just as much as do the muscles. Consequently, if proper food be not taken into the system, mental health and strength will be lacking. Cases of inflammation of the stomach, which furnish us with very good instances of semi-starvation, fully illustrate this point. I knew a woman, who, from gastritis, had been able for a long time to take but a very small amount of nourishment. She had previously been a most lovely Christian lady, of more than ordinary intelligence, but now her mind was so weak that she could not grasp the simplest children's stories, and would ask questions that would put to shame a four-year-older. Although she was not, strictly speaking, delirious,

she was most of the time talking in an incoherent, confused sort of a way, her conversation often denoting great distress of mind. Some days she would think her mother was going to die, and would weep most piteously. Another day she would imagine she had committed some dreadful crime, and would hide her head under the bed-clothes and scream and plead for mercy whenever she heard a footstep upon the stair, thinking it was an officer of justice coming to carry her to prison. Her poor mother, with tears in her eyes, one day said, "Oh! that ever a child of mine should be in this dreadful condition. If Mary's body ever should get well, her mind will always be a perfect wreck." "You are very much mistaken, madame," I said; "her brain is feeling the lack of nourishment, just as much as these fingers are (taking up her emaciated hand). When she's able to eat, all her mental faculties will return to her, just as surely as the red, plump flesh will come back to these fingers. Her brain is almost starved to death; that's all the matter with her mind." Her present sound mental, as well as physical health has fully verified my prediction. This is not an isolated case. Every physician has known such. Some may have even seen complete inanition, where the system, deprived of all food for eight or ten days, insanity or idiocy has preceded the inevitable death. I am not a thorough admirer of Bret Harte. I like him as I do many other writers—in spots; but his description of the physical, particularly the mental, condition of those dying men and women in "Starvation Camp," in "Gabriel Conroy," is wonderfully true to the life, and, therefore, most admirable and instructive to those not versed in these matters. If, then, the integrity of the brain depends upon what we put into our stomachs, how important it is that our food should be suitable, both in quality and quantity.

The human system is like a cistern, closed on all sides, with the exception of two apertures, one at the top, and the other at the bottom. If water be poured in at the top, the vessel will always be full, even though it be running out at the bottom all of the time, provided the capacity of the egress be no greater than that of the ingress. That is, if as much water runs in as runs out, it will always be full. How few young ladies who leave school are as full vessels as when they entered it. The reason is obvious. More water has run out of them in the shape of hard study and incorrect hygienic habits, than has run into them in the shape of abundant and nutritious food and correct hygienic habits. The inevitable consequence is, the water is low in the cistern. In some cases, the vessel is nearly empty. "Her nerves are all unstrung," the family physician says of one young lady the week after her graduation. "She's very much run down," he pronounces another. "The vim has all been taken out of her," he remarks of a third, etc., etc.

Of course it would be unjust for me to state that *all* educational institutions furnish innutritious and insufficient food; but this I will say, that all boarding-schools with which I have made myself acquainted, are dietetically faulty, and that all students from other schools, of whom I have inquired, give me the same testimony. They are so nearly alike, that one is typical of all. Therefore, I will take for dissection, Miss Smithe's, a first-class boarding-school for young ladies, patronized by the *elite* of all the country round.

The breakfast consists of newly-baked biscuits, made from Haxall flour, butter and coffee. The snowy bread is beautiful to the eye, and delicious to the palate, but, being nearly all starch, contains no nourishment, of any consequence, for the brain or muscles. A dog, fed exclusively on white flour by Magendie, died in forty days. Dogs fed on sugar exclusively lived nearly as long as those fed upon flour.

Sometimes, instead of, more frequently in addition to, the biscuits, are furnished griddle-cakes, made of rice. As rice contains a large proportion of starch, there is the same objection to it as to the white flour. Sometimes appear potatoes, which abound so largely in starch that the ordinary ration of one, for more adventurous spirits two, furnish very little food for the system. Sometimes the young ladies indulge in the luxury of hash, a heterogeneous, conglomerate mixture, wholly unsuited for students, consisting, as it does, of meat, potatoes and greasiness. Of the first-named ingredient I shall speak hereafter. The second I have already vetoed. The third is objectionable, not because it is fatty, as I shall show under Indian corn, but because it is partially-decomposed greasiness. The heating over of the fatty meat has produced a condition which leaves the same relation to rancidity that a smile does to a laugh, and is very apt to derange, if not entirely upset, the stomach. I have heard delicate children complain that hash made them feel sick. Whereupon their elders would say, "Why, you silly children! Yesterday you ate heartily, and without the least inconvenience from the same piece of meat that furnished the hash this morning. So you see it's all your imagination, thinking it makes you feel sick." What a convenient and universal scape-goat for ignorance is imagination.

Poor Nanny! how thy back must ache with the accumulated weight of so many heavy burdens constantly laid upon it.

One day Miss Smithe happened to read an article upon the value of oat-meal to brain-workers, so she resolved to add this cereal to her bill of fare. Accordingly, the next morning there appeared upon the table a small quantity of partially-cooked, lukewarm oat-meal mush, with nothing in particular to eat upon it. The young ladies tasted it, gave a little genteel sniff of disgust, and turned up their noses as high as was consistent with table etiquette. But as Miss Smithe's eagle eye was upon them, and they were in a good state of discipline, they made a valiant pretense of eating it. A pretense, but that was all. There was one honorable exception, however. Miss C. was a very conscientious girl, and by dint of the most wonderful pluck and self-abnegation (in her veins must have flowed the blood of a hundred martyrs), managed to worry down the small plate full of the sticky, doughy mass, before she broke open the snowy, delicious biscuit. Her facial expression, and her whole appearance while performing these two acts, were like the man's, who, detained at home from church on a stormy Sunday, forced himself to read two or three chapters in the Bible, before his tender conscience would allow him to cut the leaves of the last new magazines. Every morning the oat-meal mush met with the same reception. But, although Miss Smithe could not shut her eyes to the fact that the greater part of it found its way into the hands, or, rather, the buckets, of the "swill men," still her conscience was perfectly easy, for, had she not provided the best of

oat-meal for her pupils? and had she not explained to them "its remarkable, yes, young ladies, its wonderful hygienic value"? What more could she do? Moreover, she comforted herself with the thought that she "had an exceedingly aristocratic class of young ladies, who could hardly be expected to like peasants' food"—said reflection being a full-strength belladonna plaster, which many principals of fashionable schools apply to their consciences when they begin to ache a little. "Speedy and complete relief guaranteed in all cases." Miss Smithe's experience was but a ripple of the great tidal oat-meal wave that swept through the country a year or two ago, and resulted in an immense advantage to—the pigs, for into their stomachs the greater part of it went. This is a great pity, for oat-meal takes the first rank among the cereals for brain and muscle-feeding qualities. There were three reasons why oat-meal mush was not eaten by the scholars, and by people at large. It was not properly prepared, there was nothing nice to eat upon it, and it should have been alternated with, and, in some cases, superseded by, oaten bread.

It should be thoroughly cooked, and in a closed vessel, to keep in the osmazome; a farina kettle is excellent. It is not necessary that it should boil all of the time; indeed, steaming seems to break down the minute cells of the grain equally well, perfect amalgamation being a *sine qua non* of good oat-meal mush. It should be served piping hot, and eaten immediately. Ten or fifteen minutes' delay is as fatal to it as to beefsteak. And as to ever eating warmed-over oat-meal, bah! it's the greatest dietetic abomination imaginable. That cook has not yet been born who can ever restore to it its primitive freshness. Cream is really its only proper sauce, and at one's own table it should always be used. But until the millennium dawn, I do not expect boarding-houses to furnish this luxury. The young ladies may or may not like milk or syrup, but I never knew them to refuse an artificial cream, which is made by beating up eggs very light, pouring slowly over them (stirring the while) hot, but not boiling milk, then setting upon a hot stove until it is of the consistency of thick cream. Three large dishes of this, one unflavored for those who like the peculiar taste of the oat-meal, and the other two with lemon or vanilla, or some other agreeable essence, should be furnished. But spoon-victuals, although good occasionally, by frequent repetition grow wearisome. I do not really think God intended man to be a mush-eating animal, for I have noticed all the people whom I see are furnished, more or less, with teeth. Therefore, allow me to introduce to you my model oaten bread, of which we are charitable enough to think Miss Smithe never heard. It is made of oat-*flour*, which is oat-meal ground as fine as Haxall flour, and should be used for bread, wafers and biscuits instead of the oat-*meal* which is usually employed for that purpose.

I never ate any oat-*meal* productions that were not full of little kernels of the dried grain, that had been rendered as hard by baking as particles of uncooked rice. This condition makes their digestion and assimilation an impossibility, passing through the alimentary canal unchanged, without nourishing the system at all. The ends, also, are so sharp, that they are very liable to irritate the stomach and bowels, and even to stick into the intestines. The Scotch sometimes suffer

from this painful and often dangerous disease. Of course this difficulty is entirely obviated by using oat-*flour*. I wonder that this fine oaten bread is not generally eaten (I rarely see it, except at my own table); for, besides being exceedingly nutritious, it is really delicious, having a rich, nutty taste that no bolted flour ever possesses. S. G. Bowdlear & Co., 194 State Street, Boston, keep it always for sale in its highest degree of excellence.

The same may be said of all the known and unknown cereals. Indeed, a tour through their store is enough to make a vegetarian go wild with delight—so great is the variety, and so sweet and fresh and nice are all their goods.

As oat-flour contains no gluten, if used alone it cannot be vesiculated and made into bread, hard cakes being its only mode of administration; therefore it requires the addition of bolted or unbolted flour. If the latter is used, it will be more nutritious than if the former were employed; but the oat-flour will lose somewhat of its individuality, for, as the flavor of the wheat is fully as strong as that of the oats, the taste will be decidedly mixed, although it is no less enjoyable on that account.

Next in value, as regards general consumption the year round, comes unbolted flour bread. The finer varieties of the Graham meal, or "the cold air attrition whole wheat flour," are suitable for this purpose. If wheaten mush is desired, pearl wheat is good; but crushed and cracked wheat are too coarse and scratchy for the delicate mucous membrane of the alimentary canal. If constipation exist, the seeds of the fig, by reason of their smoothness, are much safer. Still, we need the silex contained in the husk for the enamel of our teeth, our finger-nails and our hair. But this, as well as the lime, etc., contained in the darker portion of the grain, is all included in "the cold air attrition whole wheat flour" (its long name is the only bad thing about it), but is excluded from the white flour, which is the reason that not only do our brains and muscles suffer, but our teeth. It is the universal opinion among the most scientific of our dentists, that one great cause of decay of the teeth, is the consumption of fine wheat flour. Snowy biscuits and porcelain teeth go hand in hand. The "steam-cooked cereals" furnish excellent breakfast dishes, being made for the special accommodation of sleepy-headed servants. For, as the greater part of the cooking has previously been done by steam, only twenty minutes or half an hour (don't believe the wrapper, which, I think, says ten minutes) are required in the morning. Nearly the same result may be obtained by soaking oat-meal over night *à la* rice. The barley part of the steam-cooked wheat and barley will be fully appreciated by those unfortunates who have ever tried to cook pearl barley by any common or uncommon domestic method; for it seems to be proof against the softening effect of steaming and boiling.

Then we have Indian corn meal, which makes excellent bread, owing to the large amount of oil which it contains; in hot weather it should be used very sparingly, if at all. The white Southern meal, which is nitrogenous and phosphatic, but only slightly carbonaceous, should be substituted for it. It can be eaten either in the form of hominy mush, or bread made from the flour. Indian corn meal is

good food for students in two ways. First, it is moderately phosphatic, although it falls far below oat-meal in this respect; but, secondly, this deficiency is made up by its being the most carbonaceous of all the cereals. It is the most fattening article of vegetable diet known, the famous "*foie gras*" being produced by its consumption. The great demand among epicures for this tidbit, shows conclusively that all the geese do not reside in Strasbourg; for the fatty liver cannot be healthful, when the goose is kept for weeks in a dark cellar, in a coop too small for it to move about at all, and crammed with Indian meal. The Moorish gentlemen are so fond of "moon-faced" (very fat) wives, that, through the empire of Morocco, in nearly every village, there are people who follow professionally the business of fattening young ladies for the matrimonial market of Barbary, the *modus operandi* being excessive inactivity, and the cramming down the girl's throat Indian meal porridge, mixed with grease. Ladies who are sighing for *embonpoint* should make a note of this. By reason of its being the most carbonaceous of all the cereals, it affords a great amount of nourishment to the nervous system, as the brain and spinal cord are composed largely of fat. The fact that phosphorus is found in the brain has been industriously circulated by many popular medical magazines of late, and valuable dietetic hints therefrom deduced. But the equally important one of the nerve centers being largely composed of fat, seems to have been either unrecognized or overlooked in the dissemination of useful knowledge. This is the reason why fat people are very rarely, if ever, "nervous." "Fat and easy," "fat and good-natured," are synonyms. A person may be large and bulky from dropsical tendencies, and still be fussy, fidgety and irritable. By fat, I do not mean white, bloated, diseased flesh; but firm, red, beefy fat—flesh that Hawthorne would have said "would cut up well." I think, as a general thing, parents and teachers are too much afraid of letting their children eat fatty foods. The consequence often is, a physician's prescription for cod-liver oil. The butter on Miss Smithe's breakfast table is very nice indeed. The only trouble is, there is not enough of it, the young ladies not being expected to partake very largely. This is a great mistake. For one-twelfth of its weight is a sulphureted oil, called Lecithin—a very peculiar substance, found largely in the brain and spinal cord. So do not spare the butter, young ladies. The only caution necessary, in regard to fats, is, beware of rancidity.

Brown bread comes next in our list. Not the English brown bread, which is our graham bread, but the New England brown bread, that invariable accompaniment of baked beans. It is made of Indian and rye meal, and can be procured at the baker's. As rye is very nutritious, it is good food, if one's stomach can digest it; but as this cereal has such active fermentative power (it is used more by distillers than any other one grain), it is much more apt to "turn sour in the stomach" than the other breads here mentioned.

And now for the beverages. Were Miss Smithe's coffee in the morning and tea at night of the same strength that one drinks at his own table, I should utter a fierce protest against them, as being too exciting to the nervous system; but I consider it entirely unnecessary so to do, as the color, taste and smell of the tea and coffee are so

faint, as to tempt one to ask if the tea-chest and coffee-bag cannot be floated through the water again. How very nice it is that teachers, particularly of private boarding-schools, where the pecuniary matters are in their own hands, should have such very correct hygienic views upon these points; how very touching it is to see their tender solicitude for the health of their pupils (evinced by filling each cup four-fifths full of hot water before putting in the tea, the two spoonfuls of milk, and half a spoonful of sugar).

"Strong tea and coffee, young ladies, are exceedingly injurious. The best physicians in the country fully agree upon this point." But as in the moral, so in the dietetic world: a negative evil is blameworthy, when it takes the place that a positive good should occupy. Students should fill their stomachs with something more nutritious than slightly perfumed water with a dash of milk in it; chocolate should be substituted for this supposititious tea and coffee, as it not only contains highly nutritious qualities, but acts as a sedative, rather than otherwise, upon the nervous system. It should be made of clear, unskimmed milk, with no admixture of water, and should then be regarded as food, which it really is. Milk is exceedingly healthful, and with eggs is the only perfect natural article of food—*i. e.*, they both possess the nitrogenous, phosphatic and carbonaceous element in exactly the right proportions to ensure perfect health of mind and body. Every young lady student should think that she had fallen far short of her duty, if she does not eat two coffee-cupfuls, or more, if her stomach can digest it, of this milk chocolate, and two or three slices, or more, of one of the kinds of bread here mentioned, or mush, and a liberal supply of butter. With this food the brain will be well nourished, and well able to endure the three or four hours' hard study before dinner. Sometimes, for variety, let the chocolate be made in large open kettles, in which, after having been thickened with egg, *à la* artificial cream, dip the browned slices of bread, and serve as toast, not upon the ordinary breakfast dishes, but in large soup plates, which will hold a pint of the chocolate. I have just breakfasted upon this, and found it delicious.

The dinner at Miss Smithe's consists of one, rarely two kinds of meat, one, often two or three kinds of vegetables, with pudding or pie for dessert; on Fridays, fish or oysters. And now I am about to utter a most heterodox sentiment, and one which I feel sure will shock and horrify the majority of my readers. But I make it boldly, confident that it is correct. It is this: *Meat should be eaten very sparingly, if at all, by all brain-workers, for the plain and simple reason that it is too stimulating to the brain.* "Prove it," cries beef-eater. In the *Lancet*, vol. I, page 186 (1869), we read: "A bear kept at the Anatomical Museum of Glessen showed a quiet, gentle nature as long as he was fed exclusively on bread; but a few days' feeding on meat made him vicious, and even quite dangerous. That swine grow irascible by having flesh food given them is well known—so much so, indeed, that they will then attack men." Those who have kept a watch-dog know that he is much more fierce, and liable to attack burglars, if he is fed exclusively upon meat, than upon a vegetable diet. In "Experimental Researches on the Food of Animals," page 24, London, Doctor Dundas Thompson quotes a narrative of the effects of a repast of meat on some native Indians, whose customary fare, as is usual amongst the tribe, had consisted only of vegetable food. "They dined most luxuriously, stuffing them-

selves as if they were never to eat again. After an hour or two, to his (the traveler's) great surprise and amusement, the expression of their countenances, their jabbering and gesticulations, showed clearly that the feast had produced the same effect as any intoxicating spirit or drug. The second treat was attended with the same result."

In "Transactions of the Obstetrical Society," Vol. III, 1861, page 143, Dr. Druitt, in describing the properties of a liquid essence of beef, which had been prepared according to his own instructions, speaks of it as exerting a rapid and remarkable stimulating power over the brain, and introduced it to notice as an auxiliary to and partial substitute for brandy, in all cases of great exhaustion or weakness, attended with cerebral depression or despondency. Correspondingly stimulating properties have also been recognized as an effect of the copious employment of Liebig's Extractum Carnis. No less an authority than Pavy (F. W.) pronounces this beef-tea scarcely an article of nutrition, its restorative powers being due to its stimulating effects upon the brain. The great German chemist has certainly been very successful in extracting the stimulating without the nutritious qualities from meat. Now, if he would only reverse the order of things, and tell us how to extract the nutritious without the stimulating properties from a piece of beefsteak or roast beef (for meat in its solid form, as eaten by well people, unlike beef-tea, is highly nutritious), he would confer a great boon upon mankind. Again, when a man is stricken by paralysis (one of the most formidable of brain diseases), what does the wise physician say? "You must eat no meat; it is altogether too exciting to the brain." It is the best, and sometimes almost the only thing, that can be done for the sick man now; but it is like "locking the barn-door after the horse is stolen," for very rarely, if ever, does he regain his former health and vigor. There are hundreds of men, this moment, in New York—clergymen, active business men, lawyers, authors, students—all brain-workers, who are living high-pressure lives, and eating meat two, and perhaps, sometimes, three times a day, and who, *on account of this marriage of excitants*, are doomed, sooner or later, to be laid upon the shelf, either from paralysis or general break-down of the nervous system, or some mental or nervous disease. If they were coal-heavers, truck-men, omnibus-drivers, etc., etc., I do not think they would be in any danger, for I am not a vegetarian.

Those who perform manual labor, or those who do not work at all, either with hand or brain, provided they do not lead very inactive lives, or do not possess a very sensitive nervous organization, can eat meat during cool and cold weather with impunity. Although the cases are very few in which its consumption is a *sine qua non* to the maintenance of perfect health and strength, still, as it is a very enjoyable article of diet, and we all like to gratify our palates, it may safely be eaten by many people. Individual cases prove but little; still, I will state that I knew of a professor in a medical college, a surgeon, who was obliged to relinquish the use of meat because it made him too nervous to perform surgical operations before the students. It has an equally marked, although dissimilar effect upon myself, producing such distressing insomnia (sleeplessness), that I have not eaten meat, of any consequence, for years. My experience and observations show that in many cases of insomnia, not dependent upon other diseases, there is so strong a probability that meat is

causing all the mischief, that its relinquishment should be insisted upon by the attending physician before resorting to sedative or narcotic drugs. So greatly conducive to irritability of the nervous system is meat, especially beef, that among its minor evils may be reckoned the weeping over lessons, the fractiousness, the petulance, the hysterical laughing and crying, the low spirits, excessive home-sickness, etc., etc., which appear to be the usual accompaniments of boarding-school life. This is lamentable. Whenever I see a school of young ladies afflicted with "nervousness," it reminds me of a beautiful garden of roses infested with mosquitoes. It always requires considerable moral courage on the part of the medical attendant to prohibit the free use of meat, except in cases of very grave nervous disease, like paralysis, etc.; for it seems to be the universal opinion, that the butcher's cart and the meat market are the only barriers between mankind and death. This is not so—provided food equally nutritious is substituted for it. If meat should be taken away from Miss Smithe's bill of fare an immense loss would be felt, for it is the only really nutritious article of food upon the table. But I insist upon the free use of all the cereals, vegetables, fruits, chocolate, milk, butter, cheese (which three last articles a consistent vegetarian would include under "animal food," for which reason I have not used this term when I meant meat), eggs (also animal food), and fish, the two last being substituted for meat. Eggs, ounce for ounce, pound for pound, are fully equal to the best butcher's meat in nitrogenous (muscle-feeding), phosphatic (nerve and brain feeding), and carbonaceous (fat-producing) properties. The yolk of the egg is particularly rich in food for the nervous system, containing, as it does, a phosphureted oil named Lecithin, which abounds in the brain and nerves. Some good physicians are of the opinion that fish is as nutritious as meat, while others think that it is not. In "The Angler and His Friend," by John Davy, M.D., F.R.S., London, page 114, Dr. Davy says: "If we give our attention to classed people, we shall find that the ichtyophagous (fish-eating) are especially strong, healthy and prolific. In no other class than in that of fishers do we see larger families, handsomer women, or more robust and active men." My experience and observation, which does not necessarily clash with his, goes to demonstrate that when hard manual labor is required, one must eat a *larger quantity* of fish than he would of meat, showing that the latter is more highly concentrated nutriment than the former. But this deficiency in its muscle-feeding power is obviously no drawback to its use by the student, as it is very rich in brain and nerve-feeding qualities. Indeed, with its unstimulating, moderately nitrogenous and abundantly phosphatic properties, it is the best possible food for all brain-workers. Years ago I remember reading a curious poem upon a miser, wherein he was represented as reading by the light of a half-putrid fish's head to save the expense of a candle. It made quite an impression upon my childish mind; but I had not thought of it since, until the other evening when I was walking in my garden in the dark, I saw under a bush what appeared to be a mammoth glow-worm, but upon investigation with the toe of my boot proved to be a putrescent fish's head. So bright and luminous was it, that I could distinctly see what time it was by my watch; and nothing but its intolerable stench prevented me from taking it in my hand, and reading, *à la* miser, the evening's paper. Instead, I picked

up the loathsome thing in a rhubarb leaf, and threw it over my neighbor's fence. They keep a cat—a beautiful, sleek, rose-colored, fish-loving, chicken-stealing Thomas! It was but a small thing to do—a very small thing!—but these little acts of neighborly kindness and generosity are so sweet and refreshing in this hard, selfish world of ours! What should I do, if I lived only for myself!

Want of space forbids my discussing the different varieties of fish, and their modes of cooking. Passing on to the dessert, pie should be expunged from Miss Smithe's bill of fare. It is unwholesome for the same reason that hash is, the butter, lard, or whatever fat is used for shortening, having undergone, by reason of the baking, that inevitable change which renders it half rancid. We are a pie-eating people, and from this bad habit arises much of our dyspepsia, and consequent misery. "Hygienic pies" can be made by covering them with a crust constructed of oat-flour, or Graham flour, mixed with water; but for general consumption puddings are preferable. I would like to linger upon this toothsome article of diet, for it is quite a hobby of mine, but want of time forbids. Marian Harland, in "Common Sense in the Household," will tell you all about them. This popular cook-book, in the main, is good and reliable; but she has made one great mistake, not dietetic, however, which I have never seen corrected, although it may have been. In her chapter on servants, page 370, she speaks of a book which she once read, entitled "The Greatest Plague of Life." She says: "I have forgotten who wrote it, if I ever knew"; on the next page she adds: "Douglas Jerrold wrote that book, interrupted a friend at my elbow." This is not so. The book is this moment lying on the table before me, and from its bearing the same title, and having the same characters, to which she has given a half-page description, there can be no doubt that the two books are identical. It was written by "The Mayhew Brothers," London. I own another book, by the same authors, "The Image of his Father; or, One Boy is more Trouble than a Dozen Girls," which is certainly the most curious, witty and entertaining book I ever read. They also wrote "How to get Married," and "Shabby Genteel," and probably other works.

It seems strange that these authors should not have been better known on this side of the water. "The Image of his Father" came out in 1848, and "The Greatest Plague of Life" some little time before. A short time since I lent the first-named book to a man who had just undergone a severe surgical operation, and he was so much interested and delighted with it, that he kept his wife reading it to him all of the time, to the great diversion of his mind, and consequent good. There is nothing so beneficial to a sick person as a little fun; and I really think it would be a good plan to have an American reprint of this work—a physicians' edition—on purpose for the medical profession to lend to their patients. Miss Smithe's tea consists of Haxall flour bread, butter, tea, cake, and often baked or preserved fruits. Of the first three, I have already spoken. Cake should be expunged for the same reason as pie. Vegetables (for dinner), and fruit, for any or all the meals, may be eaten. I should like to ventilate my ideas upon several faulty habits of the young ladies before, at and after meals, but I refrain; for if a doctor, the first time he visits a patient, gives him a very large and nauseous dose of medicine, he is not so likely to be sent for again. So no more at present.

DANVERS, August 25th, 1877.

A LESSON ON HOUSE DRAINAGE.

A correspondent in the *Scotsman* states that, last winter, he bought a large and expensive house in the west end of Edinburgh, newly built, and thoroughly ready for occupation. Before purchasing, it was inspected by a first-rate professional man, who pronounced it in all respects, as far as he could see, excellent in material and workmanship—the architects and the tradesmen being all pronounced first-class. Not many weeks after occupation, objectionable smells were detected in several of the apartments, which, after much trouble, were traced to an under floor. The proprietor then determined on a complete personal inspection of cisterns, closets, and of the water, soil, and ventilation pipes all through the house, with the following results: (1.) Of five cisterns, not one was ventilated. (2.) Of these five, three supplied water at once to water-closets and for cooking and drinking purposes. (3.) Two water-closet cesspools were ventilated by a pipe carried up to the roof, past sitting-rooms and bed-rooms, *in the inside of the house*. (4.) The two great drain-pipes —one carrying only rain-water from the roof, the other carrying the whole of the water used within the house, and half the roof rain-water also—ventilated themselves, *and the sewers*, by openings, one at the slates under the eaves, the other flush with the flat portion of the roof. In spite of traps, both, of course, stank abominably. (5.) One of the cisterns was so placed that, in case of anything going wrong with a water-closet right above it, the foul water must fall into the cistern beneath—a general supply one. (6.) None of the water-closets had any provision against an overflow arising from accidental derangement of wires, valves, or the like. One had twice overflowed and saturated the ceiling below. Owing to original faultiness of construction, it was found impossible, without seriously tearing the house to pieces, to apply the very best remedies in all cases; but the following, he says, have been adopted: (1.) All the cisterns are now practically ventilated. (2.) In the most objectionable case, a separate cistern has been provided for the closet; in the two others, it was found impracticable now to do this. It could easily have been done originally. (3.) The pipe has been taken outside the house, and carried up several feet above the highest part of the roof. (4.) The rain-water pipe has been disconnected from the sewer, and now discharges in the open air over a trapped grating. The second pipe has been devoted to water-closet drainage solely, and is ventilated by a shaft carried four or five feet above the highest point of the roof. A third main pipe has been supplied, which carries off all the bath, basin, and sink water, without junction with the sewer, discharging itself in the open, as the rain-water pipe already referred to does. (5.) The cistern has been protected. (6.) Overflows have been provided. The proprietor of this modern mansion says, after expressing some justifiable indignation, "I may add my strong con-

viction that any one building a house for himself would do wisely to insist on all gas and water and drain-pipes being, even at a slight sacrifice of appearance, either openly visible on the walls and floors, or enclosed only by hinged lids and boards ; and that every man who builds, rents, or buys a house, should be content with no assurance, however authoritative, as to the completeness of its sanitary arrangements, but insist on seeing them all for himself, and thus be assured that he is secure on the points I have indicated above. Otherwise he cannot dwell in safety in the otherwise best appointed mansion ; he has no security whatever that he is not daily and nightly breathing sewage gases." Councillor Gowans, in his letter to the *Scotsman* on the subject, gives the only correct solution to the difficulty. He says : "There can be no doubt that architects and builders pay too little attention to sanitary arrangements, and until some efficient control in the shape of additional legislation is procured, conferring powers on the authorities to sanction proper plans, and to see them carried out, cases of a like kind will occur. Such legislation as that alluded to has been under consideration of the Town Council for some years past, and it is to be hoped that a bill embodying such provisions will this year be proceeded with. There are always test questions at the November elections of Town Councillors, and while who is to be the Lord Provost is of some importance, I trust that my fellow-citizens will assure themselves of the soundness of the candidates upon what I consider to be the most important question which can engage the attention of the community—viz., that of Sanitary Reform. Who is to occupy the civic chair after November next may be a question affecting the honor of the city, but whether provisions are to be inserted in the proposed Police Amendment Act, providing for proper ventilation and sanitary appliances in our houses, is one affecting the health and lives of the inhabitants." —*Sanitary Journal for Scotland.*

—o—

Influence of Valleys on Health.—Mr. Alfred Haviland lately informed the London Social Science Association that many diseases were induced by the common tendency to place houses in valleys instead of on the hill-sides. He says that valleys do not get a full share of fresh air. The wind blows over, not through them, and the atmosphere within their boundaries is comparatively stagnant. His observations are therefore opposed to the common belief that valleys are especial channels for atmospheric movements; but his opinions are sustained by Dr. B. W. Richardson, who is good authority. The latter gentleman enumerated twenty-five or thirty diseases which he thought might be attributed to the propensity for valley homes. Among them are croup, influenza, scrofula, rheumatism, fistula, calculus, and possibly some malformations. The list is formidable, and, to put it mildly, it is almost incredible that diseases of this character can be caused by living in the broad and shallow valleys of England. Mr. Haviland's remarks were illustrated by maps and models showing the geological structure of the earth.—"*Scientific Miscellany,*" *in The Galaxy.*

AMERICAN PUBLIC HEALTH ASSOCIATION.

The Fifth Annual Session of the American Public Health Association was held in Chicago, Sept. 25th–28th.

JOHN RAUCH, M.D., President of the Association, called the meeting to order, and introduced

Mr. WIRT DEXTER, who said he had been desired to speak some words of welcome. He did not know as much of the history and objects of the Association as he ought to know, but, in a general way, he thought its first purpose was the study of causes of disease, and suggestions as to methods of prevention. Aside from these objects, there was a sharp pecuniary side to the efforts of such an Association which could not be disregarded. If they came together merely to discuss abstract questions, their deliberations would not attract much attention; but when they approach us with suggestions, and their determinations assume a practical aspect, then they touch the public heart. The small-pox in Philadelphia has cost that city, in the course of one epidemic of 1871 and 1872, $21,000,000, and this was traced in diminished travel and shrunken commerce, which might have been saved by wise precautionary measures. This year we rejoice in a bountiful crop, but there are other sources of wealth more certain than corn and wheat. We have been in a commotion over losses by the failure of our savings banks, yet we probably lose much larger sums through indifference to sanitary measures. There is not, said Mr. Dexter, a business in Chicago uninjured, or a residence or cottage the value of which is not diminished, by the pestilent odors of the city. Yet men, busy in their own affairs, act as though it was no concern of theirs as to the drainage of houses two blocks away. And thus we will prove that the widest traffic, the most permanent prosperity, and the largest security for the home, are bottomed on the truth that man is his brother's keeper. It is your mission to reinforce the higher duties of life among men by those most potent arguments of personal gain and interest. It is for you to teach the mere man of affairs that an intensified and narrow view is, in the long run, a losing one. You are to instruct the absorbed capitalist, ever eager to increase the permanency of his possessions, that in an active attention to the material condition of those around him rests the most continuing prosperity for himself, and thus you purify and render unselfish the heart of man in the same ratio that you advance his material condition.

Dr. Rauch then delivered his inaugural address, in which—starting from the thought that the aggregation of great masses of humanity in large cities was unnatural, and that it was needful to resort to artificial methods, in order to restore harmony—he presented an interesting account of the growth of Chicago, describing its topograph-

ical condition in early days, and tracing its progress, in a sanitary point of view, up to the present year of grace. His address was largely occupied with a consideration of the relative merits of sandy and other soils, with the influence of the lake in reference to atmospheric changes, and its influence upon the public health, with the winds and their influence, and with a variety of subjects appertaining to public health. The address comprehended much practical information, deduced from the labors of Dr. Rauch as Sanitary Superintendent of Chicago, on the initiation of earnest sanitary work in that city, and was listened to with marked interest.

Dr. E. HARRIS, Secretary of the Association, read a report on the proposed sanitary survey of the United States, He referred to the organization of State Boards of Health in thirteen of the States as a result of the study of the laws of health, and how legislators, public school boards, the press, supervisors, and ministers, had become the advocates of public sanitary duties, and of domestic and personal hygiene. The American Public Health Association was now free from embarrassments and had no political entanglements, and henceforth its work will be reciprocal with that of the State Boards. The report dwelt upon the importance of topographical surveys, and a class of studies and descriptions of the hydrography and other matters of surface geography, which are important in treating of the practical questions of sanitary drainage, among other questions necessary to the healthfulness of town sites and dwelling grounds.

Mr. E. S. CHESBROUGH, the City Engineer, followed with an elaborate discussion of the sanitary drainage and sewerage of Chicago. How the sewerage system has improved the health of the city was set forth, and then a detailed history was given of the efforts made in the direction of the improvement of the drainage system. The paper was a supplementary history, with notes and comments, and map illustrations, to that given by Dr. Rauch. Mr. Chesbrough came to the conclusion, as to the final disposal of the sewerage system, that if it must pass through the canal, the South Branch may become again as offensive as in years gone by, and his proposal was to widen and deepen the canal.

Dr. FOLSOM, of Boston, followed Mr. Chesbrough in a discussion of the sewage system, and read a draft of laws which he had prepared, in order that the Association might offer critical comments upon them before their being submitted to a Massachusetts Legislature. They were prepared by the State Board of Health, and are directed mainly against the pollution of streams and water-courses in the interest of sanitary improvement.

The discussion of the subject occupied all the afternoon.

EVENING SESSION.—Dr. N. S. DAVIS in the chair.

Dr. Davis introduced the business of the evening in a brief address, in the course of which he failed not to make the customary reference to the early days of Chicago, when the city was blessed with only one sewer, and from this point he brought the eventful history up to its present happy condition, when a National Health Association was permitted to read essays to itself in palatial hotels.

Dr. HOSMER A. JOHNSON followed with a paper on "The Sanitary Geography of Phthisis Pulmonalis and Other Pulmonary Diseases in

Chicago and Other Cities of the Northwest"—in other words, consumption in the Western States. The questions considered were: First. What is the relative frequency of phthisis pulmonalis in the Northwestern States, as compared with the Northeastern States? Second. Does phthisis pulmonalis, relatively to other causes of death, become more frequent as population increases in the United States? Third. What is the ratio of increase, if any, in the two sections of the country mentioned—namely, the North Atlantic and Northwestern States? Fourth. What are the causes that modify the prevalence of this disease in the two sections, and more especially in the Northwestern States?

These questions were exhaustively discussed by Dr. Johnson, who adduced a vast array of statistics in support of his theories. In conclusion, he said his paper had reference to the facts of distribution, and the reasons for difference of distribution of consumption. It was only suggestive of modes of prevention in so far as it indicates probable influences of causation. With the improvements in sanitary science and the encouragement to sanitary study furnished by such bodies as this, the interest manifested by the people in health problems may find some means not only to prevent the increase, but to diminish, if we may not eradicate, this disease as a factor of mortality. Of the influences that modify the prevalence of the disease in the two sections, the speaker thought it seemed probable that in the order of importance should be considered: first, the origin of the population; second, the rainfall, storm movements, changes of atmospheric temperature and humidity, character of the soil, as modifying its moisture, etc.; third, density, occupation, and modes of living of the inhabitants; fourth, social and moral condition, or general well-being and prosperity.

Dr. Gihon, of the United States Navy, made some remarks in reference to consumption on board war ships, claiming that consumption was mainly caused by dampness in the ships.

Dr. J. M. Gregory, Regent at the Illinois Industrial University, then read an essay on "The Relation of Hygiene to the Higher Education," in which he dwelt at length on the various causes of failure of health in schools and colleges. He claimed that over-stimulation by the marking system in colleges was productive of disease, and he mentioned that in his own college a committee had been appointed to devise some system of grading scholars that would avoid that way of estimating merit. Dr. Gregory's paper dealt with topics of the highest interest to human progress, and the subject was handled in an earnest and thoughtful spirit. At the close of the address a vote of thanks was tendered to the essayist.

After some discussion on the subjects brought forward, the Association closed its proceedings for the day.

Second Day.—Dr. Rauch, President, in the chair.

Dr. George L. Andrews, of Laporte, Ind., read a paper on "The Sanitary Value of Forests." A considerable portion of the paper was devoted to tracing the decay of prosperous districts simultaneously with the destruction of forests. The question was an important one, whether America would ultimately suffer the fate which had overtaken large sections of the Eastern Hemisphere. He commended the action

of Congress in appointing a Commission which had for its object the promotion of tree-planting and the conserving of our forests. He went on to show that animal life and vegetation were complementary forces, the oxygen of the trees neutralizing the carbolic acid gas emanating from animals, which distilled moisture from the atmosphere. The paper sought to demonstrate that they influenced in an important degree the rain-supply, and went on to show the beneficial effects of forests in a sanitary point of view, pointing out, also, the drawbacks to their usefulness in particular sections.

The sanitary value of forests was thus summed up by Doctor Andrews:

1. Forests increase the amount of condensation over their own areas; but by reason of the amount intercepted by their stems and leaves, the annual rainfall at the earth's surface is not, perhaps, materially affected by their presence or absence in regions well covered with other vegetation and well cultivated.

2. By means of their interlaced roots, mosses, lichens and humus, forests check the efflux of superfluous rainfalls, thus regulating the water-supply in streams and springs, and decreasing the proportion of the annual precipitation that is borne to the sea by the natural drainage of the country.

3. Forests diminish the evaporation from the earth's surface, but this hygrometric deficiency is more than compensated by the increased evaporation from their leaves. Forests may thus become beneficial or otherwise, according to circumstances. The change which tree-planting has produced upon our Western plains is thus far an unmixed good; but, by increasing the humidity of the climate of certain health resorts, as of Denver, valued mainly for its dryness, extensive tree-planting is not unaccompanied with evil.

4. Trees modify temperature, wooded countries being warmer in winter and cooler in summer. This they do by radiation; but by means of their slow conducting power, the times of their daily maximum and minimum do not occur until some hours after the same phases in the temperature of the air, thus distributing the heat of the day more equally over the twenty-four hours. The special significance of this effect lies in the fact that, as related to human health, the daily range of the thermometer is of more importance than the mean temperature of whole seasons.

5. Trees radiate and evaporate to a stratum of air equaling in thickness their height, whilst the radiation and evaporation from grasses, plants and shrubs is confined to a stratum limited to the comparative lesser planes which they occupy.

6. From the preceding it may be fairly inferred that forests modify climate to the extent of influencing the amount and character of the diseases of their vicinity. (In this inquiry residence *in* forests is not considered, universal experience having shown those situations which are permanently shaded to be insalubrious.)

7. Forests and tree-belts are of undoubted value in preventing the dissemination of malaria.

8. Trees are of positive sanitary value in affording shelter from the excessive heat of the sun, from the violence of winds, and in promoting æsthetic culture.

9. The importance of devoting to forests all regions unfit for profitable cultivation, and of protecting them by an enlightened public sentiment, as well as by legal enactment, may be fairly assumed as a sanitary, as well as an economical necessity.

10. And finally, as particularly relating to the city whose hospitality we are now enjoying, the importance of abundant and extensive tree-planting, especially on its western and southwestern exposures, which was so ably urged by our worthy President in 1869, is such as should command the immediate and earnest attention of every one interested in its welfare.

The Secretary supplemented Dr. Andrews' paper by presenting a contribution from Prof. BREWER, of the Agricultural School of Yale College, on the value of forests as a source of fuel and various crude uses in relation to sanitary matters and public economy, and particularly on the use of belts of trees on agricultural grounds.

The Secretary read a paper by Dr. EZRA M. HUNT, M.D., Secretary of the New Jersey State Board of Health, being a memorandum of observations and propositions concerning the sanitation of individuals, with reference to the arrest and prevention of infectious maladies.

The next paper was a review of the teachings of twenty-two years' record of mortality from croup, diphtheria and scarlatina in a city, by EDWIN M. SNOW, M.D., Superintendent of Public Health, Providence, R. I. The paper was a record of the author's experience as a health officer from 1855 to 1876, and presented carefully prepared statistics of mortality resulting from the diseases named.

A letter of regret was read from Dr. CHOPPIN, of New Orleans, President of State Board of Health of Louisiana, in which he offered to contribute a paper on methods of preventing the spread of yellow fever. The offer was accepted.

Dr. HENRY M. LYMAN, of Chicago, read a paper on stamping out scarlatina, and the extinguishing of zymotic disease. It was mainly devoted to a sarcastic exposé of the incompetence (according to Dr. Lyman's view), of the health officers in dealing with scarlet fever. He endeavored to show the necessity for complete isolation in order to prevent the spread of contagious diseases, and the impossibility of reaching such a result in large cities. Hence he regarded the measures adopted by our health officers as worse than useless. In the discussion of the question, the doctor displayed a good deal of acrimony and what appeared to be personal feeling.

At the conclusion of the essay, Dr. Folsom, of Boston, made a few remarks in a tone of gentle rebuke, regretting that the subject had been approached in that way, and hoping that the Association would not occupy any time in discussing a matter which seemed to have been presented as a purely local affair.

Dr. AZEL AMES, of Boston, read a paper on "The Removal and Utilization of Domestic Excreta," in which he held that among the methods proposed for removing the excreta, very little attention had been given to the question of utilization. The speaker discussed the questions, how to remove the excreta in a speedy, inoffensive and economical manner. The different systems were discussed—the vault system, the earth-closet, the water-closet, the pail system and the pneu-

matic system. The vault system he considered perilous to health as used in houses and country towns. The earth-closet system had its advantages, but was not practicable in large cities. The water system was good as far as removal of excreta was concerned, but the sewage could not be utilized. The pail system was both offensive and expensive. The pneumatic system was described, and the speaker said it had been found practicable, as practiced in several European cities. It consisted of a tank, placed at a convenient place, connected with the closets in houses by means of tubes. A vacuum is formed by means of a portable engine, which draws the substance from the houses to the tank, from which it was removed and utilized. An improvement had been made upon the system by connecting the street corner tanks with one at the central works. A vacuum was formed by pumping the air from the tank, and this formed vacuums in the smaller tanks, resulting in the collection of excreta by pneumatic pressure. How this substance was deodorized and utilized was fully described, showin how theg matter was eventually reduced to a powder and shipped in barrels. This powder had been found to be of great value. The speaker then went into a consideration of the vault system, which was in general use outside of the large cities. The prevailing methods of cleaning these vaults were offensive and unwholesome, and the speaker discussed some of them at length, finding fault with most of them. He held that it was essential that the excreta should be utilized and returned to the soil as a fertilizer.

Dr. N. S. Davis read a paper on "The Means of Diminishing Infant Mortality from Bowel Affections." The causes were stated generally as the result of high temperature in hot summer nights, and also the presence or absence of ozone, electrical conditions, etc. The principal cause, however, was the hot nights and absence of ventilation. Hot days were not so productive of this complaint as hot nights. All physicians would agree that they were, as a rule, called up to attend to such cases between the hours of midnight and early morning. The remedy suggested by Dr. Davis was, for those who could not avail themselves of floating hospitals and the like, good ventilation, a cool bath before putting the patient to bed, to reduce the temperature of the body and quiet the nerves. Proper attention to the rules suggested would reduce infant mortality.

Dr. Hamill testified to the correctness of Dr. Davis' views, adducing in support of them some of his experiences with children in the Floating Hospital.

Dr. Lyman thought well of Dr. Davis' suggestions, and said they would be of great benefit to the children.

Dr. Turner said that children were fed largely on artificial food, and when cow's milk was used, it was weakened to make it seem like mother's milk. He knew of some cases in which children had died of starvation. He was in favor of pure milk.

The discussion of this subject was prolonged for some time.

In the absence of Prof. Hitchcock, of Amherst College, Mr. Woodbridge volunteered to read, from the proof-sheets furnished, the Professor's "Report upon the Experience of the Department of Physical Education and Hygiene of Amherst College." It was an interesting account of the apparatus in use at the College, with an ar-

ray of statistics and observations showing the results of the system of physical culture put into practice at that University.

Dr. COAN, of Quincy, followed with a brief essay on female physical culture at Ann Arbor College, Michigan, showing the beneficial results of a system of physical training in the development of health among the girls.

EVENING SESSION.—Dr. E. INGALLS in the chair.

Dr. EDMUND ANDREWS addressed the Association on "The Sanitary and Economical Importance of the Best Surgical and Medical Treatment of the Needy Poor." The main thought expressed, was that the ranks of pauperism were largely augmented by a class of poor though industrious men, who, meeting with accidents, such as the breaking of a leg or an arm, and being unprepared with the means of obtaining proper medical aid, were compelled to drift into the almshouse disabled, and thus become unwilling burdens to the community. The purport of the discourse was to show that it would be economy in the authorities to provide prompt remedies for such a class in these emergencies. Better expend $15 at the start, for a poor, disabled workman, than let him become a pauper, and have to pay out perhaps $2,000 before he dies. He urged that humanity and economy alike demanded better attention to the subject.

Dr. CHANCELLOR, of Baltimore, made some sensible observations on the same subject. How the poor can best be enabled to meet the contingencies of sickness was, in his opinion, a most important question, and we should be ready to adopt any plan that would look to a solution of the difficulty. The first application of the honest poor man for relief is always occasioned by sickness in his family, and, once that first application is made, the sense of pride and shame is destroyed. It therefore behooved a community to provide prompt and efficient aid in such cases. The speaker suggested the propriety of establishing on a large scale a system of medical relief through the medium of public dispensaries, and he hoped the Association would recommend some investigation into the condition of our almshouses, and the causes which contributed to pauperism.

Dr. HARRIS offered the following resolution in reference to the subject:

Whereas, Public attention is being urgently invited to the duty of adopting measures for repressing and preventing pauperism; and

Whereas, There are causes of bodily disability which induce dependence and entail pauperism from the neglect or incompetence of the attendance and medical and sanitary care received by the needy poor when such care should be given:

Resolved, That, in the judgement of this Association, it is eminently desirable that the official inspection and inquiry for ascertaining and repressing the cause of bodily disability and pauperism is an important public service in the interest of hygiene and the public welfare, and that those interests require that this duty should be continued with faithfulness, and the results be published widely for the benefit of the people.

The resolution was adopted.

Dr. HENRY M. LYMAN read a paper on "The Present State of Exact Knowledge of the Causation and Prevention of Epidemic Diseases."

The Rev. BROOKE HERFORD, by invitation, read a very interesting paper on "Public Holidays and Public Health." It was an eloquent lament over some of the tendencies of modern commercial life. This excessive strain of work, this life at high pressure, was seriously complicating the problem of public health. The pace at which we go is so quick as to overtask brain and hand; it is not merely going ahead, but racing. Society is suffering for the want of rest, of leisure. There is no leisure class in such a community as this, and but little chance of forming one. We have the largest country in the world, with about enough men of leisure to man one of the old Italian Republics. The remedy suggested for this unhealthy life was more public holidays, and the speaker commended the example of the English people in the establishment of the Saturday half-holiday, and the multiplication of public holidays.

The address was listened to with evident pleasure, and a vote of thanks was tendered to Mr. Herford.

The hour of adjournment having arrived, adjournment was announced to the residence of L. Z. Leiter, Esq. (of Messrs. Field, Leiter & Co.), who had tendered the Association a reception.

THIRD DAY.—Dr. RAUCH, President, in the Chair. Mayor Heath, of Chicago, took his seat by the side of the President.

Dr. OSCAR DEWOLF, Health Commissioner of Chicago, read the first paper, on the "Destruction of Offensive Gases from Rendering Tanks and Fertilizing Establishments." He spoke of the immense amount of offal produced from 300,000 beeves and over 3,000,000 hogs, and gave a description of the rendering process, which is familiar to the people of Chicago. He also explained the fertilizing process, and referred to the refusal of the establishment at the Stock-Yards to comply with the law passed by the Council in regard to licenses. He said he would prosecute them if they failed to come to time on Monday, and continue to do so on every working day thereafter.

Dr. Folsom, of Boston, followed with some remarks on the same theme. The offal rendered should, in all cases, be fresh, since the gases could not be got rid of in putrid offal. He was of opinion that the bad condition of the atmosphere from rendering establishments was, in many cases, a cause of disease.

The discussion was participated in by several other members.

In the afternoon Dr. ELISHA HARRIS read a report on a practical method for securing complete and authentic records of the causes of death throughout the United States, in which he showed the inutility of the methods at present pursued, and the necessity of making these records of mortality a proper basis for inquiry.

On motion, the subject matter was referred to the different State Boards of Health, and it was ordered that a limited number of copies of the report be printed for their use.

Dr. CHARLES N. HEWITT, of Minnesota, read a paper on hygiene in relation to the public schools, in which he advocated a wider diffusion of knowledge on the subject of health, by means of the physician, the newspaper and the school-teacher.

This closed the reading of papers, *in extenso*. The Secretary, however, called attention to a number of papers in his hand on different subjects, which there was not time to read. Among them were pa-

pers by Dr. Edward G. Janeway, Health Commissioner, New York; Dr. Cohen, of Quincy, and Drs. Stoddard and Dean, of Rochester, N. Y. He also noticed an interesting paper by Dr. A. N. Bell, of New York, on the history of the site and the progress made in founding a city on Long Island, to be known as "Garden City," with remarks on the sanitary conditions proposed; and one by Dr. T. J. Dunott, of Harrisburg, Pa., on "Sanitary Safety in Railroad Traveling." All of these papers were referred to the publishing committee, with power to publish in the next volume of the proceedings of the Association.

Dr. Chancellor moved a vote of thanks to the Mayor, to the press, to the City Railway Company, to the hotel proprietors, etc., which was carried.

The time and place of holding the next Convention was referred to the Executive Committe, with a recommendation that it be held earlier in the season.

After some minor business in the shape of votes of thanks, the Association adjourned *sine die.*

The next meeting will be held at White Sulphur Springs, Va., some time in August.

An eminently fitting close to the marked sessions of the Association, was the generous reception tendered to the members of the Association last night by Mr. Levi Z. Leiter. His elegant residence, No. 60 Calumet Avenue, was brilliantly lighted, and thrown open for the entertainment of the distinguished guests and a large number of representative citizens of Chicago; and the fact that so many responded to the invitations indicated an appreciation of Mr. Leiter's considerate hospitality. Eight o'clock was the time set for the arrival of guests, and from that hour till about eleven o'clock the visitors enjoyed the treasures of art and literature with which the mansion is replete, and the parlors were enlivened by the hum of conversation as those present discussed the topics of the day, the subjects of scientific investigation that have interested the Association for days past, the inscrutable mystery of Bridgeport, yesterday's trip to the Stock-Yards, etc., etc. A bounteous collation, and a lavishness of minor attentions, did much toward making the entertainment a most complete and enjoyable one.

The following were elected officers for the ensuing year:

President—Dr. Elisha Harris, New York; First Vice-President, Dr. J. L. Cabell, President of the State Board of Health, Charlottesville, Virginia; Second Vice-President, Dr. Hosmer A. Johnson, Chicago; Secretary, Dr. E. H. Janes, Secretary New York Board of Health; Treasurer, Dr. Henry B. Baker, Secretary State Board of Health, Lansing, Michigan. Executive Committee: Dr. John H. Rauch, President State Board of Health, Chicago; Dr. C. B. White, ex-President State Board of Health, New Orleans; Dr. C. W. Chancellor, Secretary State Board of Health, Maryland; Dr. J. T. Reeve, Secretary State Board of Health, Wisconsin; Dr. C. N. Hewitt, Sec-

retary State Board of Health, Red Wing, Minnesota; Dr. Thomas J. Turner, Medical Inspector United States Navy, Washington, D. C.

CHIEF RESULTS.—To A. N. BELL, M.D., Editor of THE SANITARIAN: In response to your request for information respecting the chief results of the Fifth Annual Meeting of this Association, held in Chicago, September 25th to 27th, I need only mention that the time was very fully occupied by the reports, papers, discourses and discussions, and that there were some important voluntary contributions. Numerous papers were offered, which, in the absence of their authors—all greatly esteemed members—could only be read in abstracts or outlines, as courtesy to members in attendance gave them the right of reading and discussion. Your own absence was regretted, and discussion on the topics of your paper on Garden City, and the conditions of salubrity of that American *Hygeopolis*, was necessarily deferred; but problems of the sanitary drainage and sewerage of Chicago and the Western cities and villages received full attention. The presence of such expert sanitary engineers as Mr. C. S. Chesbrough, of Chicago; Moses Lane, of Milwaukee; Robt. Moore, of St. Louis, and Prof. Geo. Churchill, of Knox College, warranted the Association in giving a large share of attention to the most practical questions of sanitary engineering.

Chicago itself presents at one view the most remarkable and instructive array of sanitary problems and projected or necessary works of sanitary improvement of any city in the United States. Its 500,000 inhabitants will rapidly increase to 1,000,000, on the very swamps and low prairie where, fifty years ago, the site of the present vast city was marked by a few frail shanties of Indian traders, defended by the guns of Fort Dearborn, at the sluggish mouth of the Chicago river. Now, under that river and its swampy affluents there have been constructed some thirteen miles of tunneled viaducts, to facilitate the movements of the population and their enormous traffic; the river itself has been turned back and made an affluent of the Illinois and the Mississippi, by its new channel into the Desplaines river, which courses along on the *divide* that defines the watershed of the eastern and the southwestern outflows respectively; and thus the city's sewerage and scavenage was turned away from the lake, whose waters, now pure, have been turned and lifted into all the streets and dwellings of the city, through a grand aqueduct, whose distal inflow is at a point miles away from shore; and now the lake waters along North Park are to be pumped over in continuous streams, to flush and cleanse away the stagnant North Branch of the Chicago river and the sewer outflow.

The stock-yard and flesh food packing of that largest food-depot in the world, have so accumulated the offensive and insalubrious accessories of such business, that sanitary and economical problems of enormous magnitude must there be treated with masterly skill, and to this subject the health officers in attendance at the meeting gave special attention. Dr. Folsom, the keen-sighted Secretary of the Mass. State Board, expressed the convictions of all of us who have studied these matters, when, in concluding the inspection and discussion of them, he said: "Chicago must expect frequent and fatal visitations of preventable epidemics, especially destructive to young children, so

long as even the present degree and kinds of defilement of the atmosphere of the city continues."

The State Boards of Health took a noble part in the meeting, and in the plan of work and council for the ensuing year, the purpose seems plainly indicated to prosecute careful inquiries in regard to the causation of preventable and epidemic diseases, the preparation for organizing the best system of registration of vital statistics and of sickness, the causes of death especially, while concerted efforts shall secure a most deliberative and practical conference at the next annual meeting.

The discourses by Prof. Hosmer A. Johnson, Prof. Davis, Prest. Gregory, the founder of the Industrial University of Illinois, and Rev. Brooke Herford, who advocated recreations and other mental aids to hygiene, were excellent contributions to the Association's purposes. The subjects which may be said to have been so decidedly advanced to practical conclusions in the reports and papers, as permanently to influence the methods and results of public health-care, should be mentioned: Sanitary Engineering in its Relation to Drainage and Cleanliness; the Protection of Streams from Pollution; the Outlining and Suggestion of Plans for Organizing a System of Registration of Vital Statistics, giving as great completeness, accurate verification and uniformity as practicable in each State; Health in Education, and, as Dr. Hewitt, Professor of Hygiene in the University of Minnesota, put it pertinently in his impromptu address, Health in the Home and Parental Training and Habits also, and the Sanitary Safeguards of Infancy in Cities. Contributions from the President of the Board of Health of New Orleans, from Dr. E. M. Snow, of Rhode Island, Dr. Thad. M. Stevens, of Indiana, and others, were referred for publication.

The Secretary announced that the German Association of Public Health-Care was in session in the city of Nüremberg on the same days of this meeting in Chicago. The courtesies of that Association were acknowledged and reciprocated. The German Association's discussions were limited to *five* subjects, and the formal reports and papers thereon by previously appointed members. The organization and plan of the French Society of Public Medicine and Hygiene, under the presidency of M. Bourchardet, were also announced. Upon adjournment, September 27th, the purpose to hold the next annual meeting in a central locality, favorable to a most deliberative conference, seemed to prevail. Truly yours, E. HARRIS.

58 *Bible House, New York, October 15th*, 1877.

Testing Flour.—An easy method of detecting adulterations in flour, according to Jegel, is to mix the flour with chloroform. The chloroform exerts no chemical action upon the flour; but being specifically heavier than flour and lighter than the adulterants commonly added, the former floats upon the chloroform and the latter sink. On shaking up a sample of flour in a test tube of chloroform and allowing it to settle, a sediment will indicate adulteration. On decanting the turbid liquor, the sediment may be washed and weighed or tested quantitatively.

CIVIL MALPRACTICE AND SURGICAL JURISPRUDENCE.*

There is no country in the world in which physicians and surgeons are harassed with suits for malpractice except England and the United States. In this country the Western States, particularly Indiana and Illinois, enjoy in this respect an enviable, or an unenviable reputation. The medical profession seem to be held to a stricter accountability before the law than any other class of people.

The word "Malpractice" is seldom used except in its application to medical questions, and the terms, "Legal Medicine," "Medical Jurisprudence," "Surgical Jurisprudence," so frequently met with in the public prints, and in works on law, indicate the strict account that is exacted from those who practice medicine. No one can object if the doctor be held strictly accountable for want of skill in his profession, or for negligence in the performance of his duties. But the fact is that these suits are generally instigated by avarice, or they are undertaken to gratify some feeling of personal enmity, and not to obtain proper redress for real grievances. The ablest men in the profession are often the parties aimed at in these suits, while the ignorant charlatan is allowed to perform his "*cures*" unmolested. There seems to be an unaccountable anti*pathy* pervading all classes of the community against the medical profession. Why is it? All anti*pathies*, and all unreasonable prejudices, arise from ignorance, whether it be seated on the judge's bench, in the jury-box, in the drawing-room or by the humble fireside. The secret of much of it is expressed in the following epigram, written by Cordus, in the sixteenth century:

> "Tres medicus facies habet, unam, quando rogatus,
> Angelicam, mox est, cum juvat, ipse deus.
> Post ubi curato pascit sua præmia morbo
> Horridus apparet, terribilisque Satan."†

But we do not claim perfection for the profession; there is much hypocrisy and quick-witted cunning among them—that is, much arro-

---

* Civil Malpractice: a Treatise on Surgical Jurisprudence, with chapters on Skill in Diagnosis and Treatment, Prognosis in Fractures and on Negligence. By Milo A. McClelland, M.D., New York: Hurd & Houghton; Cambridge, Mass.: The Riverside Press, 1877.

† A friend has given us the following translation:

> "The physician like an angel seems,
> When he in the sick-room brightly beams;
> And like unto a God is he,
> When he's removed the malady.
> But in a different light we view
> The doctor when his bill is due;
> Our alter'd eyes we at him level,
> As though he were the very devil." R. B. R.

gance and ignorant assumption. Like the "*Femmes savantes*"—the literary spinsters of Molière—they can see no merit anywhere except in themselves and their friends: "Nul n'aura de l'esprit, hors nous et nos amis."

But the real pests of the profession are the ignorant, unscrupulous parasites, who cling with obstinate pertinacity to the profession, and impudently persist in affixing its title to their names, that thus they may the more easily prey on the ignorant and the credulous in the community. Of these Hudibras has said, with his characteristic pith: "Pretenders to medical skill *quack* of their cures." Juvenal, who uses his keen satire with as much dexterity as an able surgeon in handling his scalpel, thus dissects the charlatan of the last quarter of the nineteenth century: "These have a quick eye, great impudence, a ready speech, more rapidly fluent even than Isseus. What is he? He is anything you wish: grammarian, rhetorician, geometer, painter, rubber (*in public baths?*), soothsayer (*medical clairvoyant?*), rope-dancer, physician, wizard (*mesmerizer?*). He knows everything."

If we substitute a single word, Pope has forcibly rendered this passage:

> "All sciences the hungry vampire knows,
> And bid him go to hell—to hell he goes."

This may seem severe. It is; but it is not too severe for the class that are allowed to register their names as "*qualified physicians* and *surgeons*," and send such death certificates to the Boston Board of Health as this, from a doctress: "This certifies that A beby boy died on the bornday of Febberly, 1876. Cause of death, '*Born.*'" On other certificates the cause of death was given: "lack of villality," "daeth barne," "canker humer," "swallowing," "lung dises," "canther of the bowels," and "chituses."

And the Registrar of Vital Statistics is obliged to receive such vile gibberish from ignorant boors who cannot write their names, because the vile and venal politicians who manage our *Health Boards* cannot see any difference between this class of *medical practitioners* and the educated physician; and the good-natured tax-payer contributes his share every year to support a law of Vital Statistics to record such *garbage*.

The *Nation*, quoted by Dr. McClelland, asks: "Is he or she a physician who has no degree, no diploma; who has little or no experience; who cannot spell the name of a disease so that it can be read or understood, and who cannot write his or her name at all, but who simply makes a mark? If so, what weight shall we give to such certificates? of what possible value are they?" We might ask: What consideration will they receive abroad from scientific men?

Under existing circumstances, the subject of this book is of extreme practical importance to the practicing physican and surgeon, as it must be one of great professional utility to the lawyer who undertakes the management of such cases as are recorded in it. Our author tells us that malpractice may be divided into three kinds, namely; 1. "'Ethical Malpractice,' in which persons claiming to be medical men bring suits against physicians or against medical societies for alleged insults to their professional dignity. 2. 'Civil Malpractice,'

in which patients bring suits for damages, which they have, or think they have, sustained through want of skill, or from negligence on the part of their attending physician. 3. 'Criminal Malpractice,' in which the people or State is made the plaintiff."

The Code of Ethics of the American Medical Association makes no distinction betwen educated and uneducated "quacks." The hypocritical tool who has received a certain amount of education, who is supposed to know what the duties and the obligations of an honorable physician are, that will bring himself to pander to popular prejudice and ignorance, is far more despicable than the ignorant "*medical practitioner*," who spells baby "bebby," or who makes his mark to a "certificate of death." The "Code," in speaking of *secret nostrums*, says: "If such nostrum be of real efficacy, any concealment regarding it is inconsistent with beneficence and professional liberality, and if mystery alone gives it value and importance, such craft implies either disgraceful ignorance or fraudulent avarice." Yet the public seem to make little distinction between the ignorant *leech*, who serves them only to enrich himself, and the honorable physician who devotes much of his time to the service of the poor, without hope of pecuniary reward, and is constantly striving to extend the scientific knowledge of disease, in order that he may be the better able to control it. The "Code" further says: "It is also reprehensible for physicians to give certificates attesting the efficacy of patent or secret medicines, or in any way to promote the use of them." Here, again, the unwillingness of the profession to countenance the use of "patent medicines" is attributed to selfish motives. Such is not the case. Some time ago a doctor who had been practicing for upwards of thirty years said to the writer: "If all the 'quack' medicines were banished from the drug stores, half the doctors would starve."

The author says that "the subject of consultations is not well understood by persons outside of the profession." Many persons, highly intelligent on other subjects, have expressed their surprise that members of the regular profession will not hold consultations with members of other "schools." There is nothing surprising in it. Every one knows that if one party believes that "like cures like," and another does not, they can never agree on the remedy to be given to the patient. The only benefit the sufferer would get from such a consultation, would be that his purse would be made lighter, for he pays a double consultation fee. Or suppose that they should agree on the remedy to be given, and one insists on an infinitely small dose, while the other advises a comparatively large dose, what becomes of the patient while they are trying to agree? The same "Code" declares that, "in consultations no rivalships or jealousy should be indulged; candor, probity and all due respect should be exercised toward the physician having charge of the case." The violation of this principle has given rise to the adage, "Medicus medico lupus."—"The physician meets with no wolf so dangerous as his fellow practitioner." The general truth of the charge here made is abundantly proved in the work before us: men make statements under oath which prove that they are either very ignorant or very unprincipled.

Under the head of "Civil Malpractice," the author gives us a very full and very satisfactory digest of "reported cases"; every question

of importance that has been adjudicated is illustrated in the reports under distinct heads. The cases of Criminal Malpractice cited, are scattered through the Civil cases, without any apparent method. They are comparatively few in number, and the most important ones are taken from English reports. American cases seem to look for damages, rather than the vindication of law and justice. From the long and careful study the author has made of this very important subject, he must be able to make some very valuable suggestions to his professional brethren. As it is a subject with which most practitioners are not familiar, much could be said that would be both instructive and interesting. He has confined himself to a few remarks appended to some of the cases, which, while they are exceedingly valuable, leave us to regret that they are not more copious. There are two subjects in particular, each of which would require a long chapter, that are of vital importance; these are questions regarding the responsibility of physicians and surgeons, in cases coming under the "Law of Torts," and the value of verdicts, as rendered by juries, in cases of so-called Malpractice. A very large proportion of the cases decided in the lower courts are carried either to the Supreme Court or to the Court of Appeals, and the reader will be astonished at the number of these that have been "reversed." What will be no less surprising is the severe, yet dignified, criticism or review that many of the rulings have drawn from judges in the higher courts, as on page 224: "For the cause that brandy was furnished to the jury, and drank by several of them while deliberating upon the cause, after retiring to form their verdict, we think the verdict must be set aside." This decision was rendered by Chief Justice Wood, in the case of *Leighton* v. *Sargeant*. The case had been twice before the lower courts. "In the first suit the jury found damages for plaintiff in the sum of $1,500 and costs, a review of which by the Supreme Court is appended. In the present trial damages were found for the plaintiff in $525 and costs. The case was again taken to the Supreme Court under exceptions, in some respects entirely new." (McClellan, p. 209).

On this case, the late Dr. Valentine Mott said: "No surgeon ought to be prosecuted and fined for such a result. The patient ought to be thankful that it is so favorable, and pay his surgeon for services, as the defect can readily be remedied by a high heel or some mechanical contrivance." The jury thought very different, as their verdict of $1,500 damages clearly proves. The case was a "dislocation of the right ankle-joint, and a comminution of the tibia, with a fracture of the fibula. The injury is termed a compound dislocation of the ankle-joint, always a very grave injury, involving, sometimes, the life of the injured persons." What say you, surgeons, to paying $1,500 damages and costs for the privilege of treating such a case and lose your fee as well?

This verdict brings us to consider the value of verdicts as rendered by "juries." In the case of "Howard *v.* Grover," a verdict was rendered for the plaintiff, who was charged with malpractice as a surgeon, for $2,025. The decision of Justice Wells seems to us incomprehensible. He says: "The practice of surgery is indispensable to the community, and, while damages should be paid for negligence and

carelessness, surgeons should not be deterred from the pursuit of their profession by intemperate and extravagant verdicts." Farther on, he continues: "We are constrained to believe that the jury must have been actuated '*by some undue influence,*' and that justice requires a reduction of the verdict. But we have so much reluctance to interfere with it that we will allow it to remain, if the plaintiff will remit $500 of it. If this is not done, the verdict will be set aside and a new trial granted." This is, to say the least, a novel opinion for a judge to render, and an equally novel way to terminate a suit for damages.

A very large proportion of the book is devoted to the discussion of subjects that have very little immediate relation to surgical jurisprudence. These are, "Skill in Diagnosis in Cases of 'Fractures' and of 'Dislocations;'" "Amputations;" "Prognosis in Fractures—" the Tables under this head occupy more than a hundred pages of the book. The value of tables has often been questioned, and the value of tables in this particular case is of more than doubtful utility; and as the accuracy of Prof. Sayre's tables have been severely criticised abroad, they are of still more questionable value. All these questions belong properly to text-books on surgery. In this connection, however, they will enable the plaintiff to demand a very high degree of skill. They will enable the attorney for the prosecution to set up a model, as nearly perfect as human skill can make it, by which to judge the defendant. They will make it a task of extreme difficulty for the defendant, after this standard has been presented by a skillful lawyer, to bring down the minds of the average jury to the belief that they should require, in making up their verdict, only the possession of "*ordinary* or *reasonable* care and skill, and the exercise of the best judgment in matters of doubt, and not the possession of the highest degree of skill." It may be that motives of personal friendship induced the author to bring the works of these two surgeons so prominently forward.

The references we have made to matters treated in this work show that they are of the highest importance, and the author has done his duty faithfully, intelligently and conscientiously, in the selection of cases, for there is not one of them but will repay a careful study. We must now part with our author, and we think every reader will say to him: "Macte nova virtute." T. P. C.

The Medico-Legal Society.—At a meeting held Oct. 3d, 1877, the following officers and trustees were elected for the ensuing year: *President,* Hon. George H. Yeaman; *First Vice-President,* C. S. Wood, M.D.; *Second Vice-President,* D. S. Riddle, Esq.; *Recording Secretary,* Geo. W. Wells, M.D.; *Asst. Recording Secretary,* Henry S. Rokenbaugh, Esq.; *Corresponding Secretary,* Jean F. Chauveau, M.D.; *Treasurer,* Thomas S. Bahan, M.D.; *Librarian,* James Appleton Morgan, Esq.; *Curator and Pathologist,* John F. Dunphy, M.D.; *Chemist,* Prof. R. Ogden Doremus, M.D.; *Trustees* for one year, William G. Davies, Esq., R. J. O'Sullivan, M.D.; *Trustees* for two years, Max F. Eller, Esq., John C. Peters, M.D.; *Trustees* for three years, Nathan Bozeman, M.D., Jacob F. Miller, Esq.

HOUSE DRAINAGE.

ABSTRACT OF A LECTURE ON "DANGERS TO HEALTH IN OUR OWN HOUSES."*

"I have no hesitation in expressing my conviction—a conviction based upon observation during the last year and a half—that there is hardly a house, the sanitary arrangements of which have not been reviewed within the last four or five years by persons acquainted with recent advances in sanitary knowledge, which can be relied upon for safety."

This timely lecture brings to the notice of householders a subject in which every one of them is deeply concerned, and yet it is one about which the majority of them are profoundly ignorant; and what the lecturer says of England is certainly no less true in this country: "There are still, no doubt, architects, builders, town councillors—aye, even *medical men*—who look upon those who urge such sanitary revision of houses as hobby-riders and enthusiasts." The author gives us his reasons for delivering this lecture, and we must express the hope that many others may be actuated by the same generous motives: "Being neither an architect, a sanitary engineer nor an officer of health, I do not profess to say what are the *best* ways in which these evils may be avoided, but I wish, as a *householder* and *house-owner*, to put before you facts upon which every *tenant* and every *landlord* ought to *inform himself*, and, as a *medical man*, to declare to you how frequently, within the experience of myself and my immediate medical friends, *illness and death have been found associated with gross sanitary faults.*"

We give the following remarkable case: "A little girl was attacked by diphtheria, and died. Several other children fell ill, one by one, and recovered. The mother was twice attacked, and recovered only a few days before her confinement. The diphtheria was confined to this house, and there was none in the neighborhood.

"The following conditions explained the outbreak: About ten days before the outbreak, the kitchen sink become stopped up, and men were employed to open the drain in the yard, and to remove a mass of decomposing filth, most offensive. . . . The whole family had lived and slept for months in a tainted atmosphere, as the bath and lavatory, with waste pipes passing untrapped into the drain, were placed in a closet without any opening whatever to the outer air."

Of landlords the author says: "He is committing little short of manslaughter, if, by refusing to rectify sanitary defects in his property, *he saves his own pocket at the expense of the health and the lives of his tenants.*" The author is anxious to arouse householders to a sense of their duty to care for the health of their families, and wishes

* A lecture delivered before the Leeds (England) Philosophical and Literary Society, January 23d, 1877, by T. Pridgin Teale, M.A., Surgeon to the General Infirmary at Leeds. London: J. & J. Churchill, 1877.

to make them feel that when "*preventable disease*" (typhoid fever, diphtheria, scarlet fever, etc.) occurs, *somebody is to blame for it.* It may be the occupant, it may be the landlord, or it may be the builder, who scamped the work; it may be the workman, who idly, carelessly performed the work, or it may be the authorities, who allowed the house to be occupied with the faults undetected. "When disease arises which we call '*preventable,*' depend upon it, some one ought to have *prevented* it." Nothing can be more true than that work is defective from *ignorance* or from *dishonesty.* We are constrained, from its truth and force, to quote the following paragraph: "Probably no work done throughout the kingdom is so badly done as work in houses and drains and pipes which are out of sight. Probably no work is better done in the kingdom than the locomotive turned out for our railways, or the machinery which we send to all parts of the world. Are the workingmen less honest in the one case than in the other? I trow not. The difference is this: Necessity, in one case, compels good work; indifference and ignorance, in the other case, allows bad work to pass unchallenged."

With regard to questions pertaining to sanitary science the mass of the people are apparently indifferent, certainly they are most densely ignorant. They will attend lectures on any of the sciences except the science of health. Many manifest a kind of morbid curiosity to read books treating of the *cure* of disease; but few have any desire to know how to *prevent* disease. How many are there who recognize the fact, that the laws which bring sewer gas into their houses are of the same order and just as constant and unchangeable as those that govern the movements of the heavenly bodies or the ebb and flow of the tides? When people come to realize those things, they will begin to understand the earnestness of sanitary reformers, and their readiness to preach, *in season and out of season,* to people who pay but little heed to their instruction, and are rarely governed by their teaching.

On this negligence and this indifference the London *Times,* of October 19th last, remarks: "In the present state of European questions and of political parties, there is no hope that any impulse to sound sanitary legislation will be given from above, from Statesmen or Ministers; and there is no prospect of any substantial measure for the protection of health and for the extinction of preventable disease, until such a measure is demanded, irresistibly, by the public." Substitute the words *Politicians* and *Legislators* for "*Statesmen* and *Ministers*" in the paragraph cited above, and the criticism is as applicable to New York as to England. The diseases that afflict our legislative bodies are ignorance and dishonesty, and the victims of these can be respectively singled out, notwithstanding their persistent efforts to cloak falsehood and treachery. The *Times* continues: "As soon as the average householder comes to understand that a healthy family is more important than domestic decoration, and that it may be even more desirable to spend money in drainage than in carriages, he will not fail to put his newly acquired information into practice. When he has obtained all the security which his own efforts can insure, his next requirement will be to be protected by the law against the neglect of his neighbor."

T. P. C.

Editor's Table.

Pauperism, Vice and Crime.

In a condensed review of the "Relations of Unsanitary Conditions to Pauperism, Vice and Crime," two years ago, we had occasion to state:

"It is almost too patent for remark, that the filthiest parts of towns are inhabited by the most unhealthy and the poorest people; that unhealthy surroundings are scarcely less potent in blunting the sensibilities and lowering the standard of morals, than in diminishing the strength of the physicial system, and to such a degree that even the new comers, as there are always likely to be some in unhealthy neighborhoods, lose both moral and physicial stamina, have their sensibilities deadened by the vitiated elements around them, and not infrequently become debased to the level of the polluted sinks and gutters amidst which they live. When once accustomed to their slums, if from any cause they are forced to leave them, they strive to regain possession or seek others like them, being apparently incapacitated for sudden changes even for the better."

These remarks were made with special reference to the city of New York, under an inquiry instituted at the instance of a committee of the State Board of Charities of New York, under whose auspices a special paper on the *Causes of Pauperism*, by Charles S. Hoyt, Secretary of the Board, in last year's Report, and other Reports, whose titles are hereto appended,* now recall them.

---

*1. Tenth Annual Report of the State Board of Charities, transmitted to the Legislature January 18th, 1877.

2. "The Jukes," a study in Crime, Pauperism, Disease and Heredity. Also "Further Study of Criminals," by R. L. Dugdale, member of the Executive Committee of the Prison Association, N. Y., with an Introduction by E. Harris, M.D., Corresponding Secretary Prison Association. 12mo., p. 120. New York: G. P. Putnam's Sons.

3. "Heredity as a Factor in Pauperism and Crime," by Edward H. Parker, M.D., Poughkeepsie. A paper read before the Medical Society of the State of New York, June, 1877.

4. Thirty-Seventh Annual Report of the Executive Committee of the Prison Association of New York, for the year 1876.

5. Seventeenth Annual Report of the Commissioners of Public Charities and Correction, New York, for the year 1876.

These Reports verify and strengthen the conclusions we entertain in regard to the unsanitary bearings of pauperism, vice and crime, while they go much further in their inquiries into the prospective social status of communities which encourage them.

Whatever questions may be raised in regard to the general trend of human progress or retrogression in its relations to circumstances, there is nothing which seems to us to be more certain, than parental influence "upon the children's children unto the third and to the fourth generation," foreshadowing, if not indeed settling, the destiny of families, communities and nations. And he who throws light on the principles of human inheritance, and the special causes which influence it, is a benefactor to his race.

In Mr. Hoyt's summary of the probable causes of Pauperism, in 9,855 persons over sixteen years of age, 84.36 per cent. among the males and 41.97 per cent. among the females—or, of both sexes, 62.23 per cent.—were found to be intemperate. And among the parents of these, as far as traceable, there were of the fathers 44.59 and of the mothers 17.32 per cent. intemperate.

Of 4,047 insane persons examined, the ratio of intemperance was, among the males, 79.21 per cent., among the females, 21.44 per cent.

Of the whole number of paupers examined (12,614), 397, or nearly 3.15 per cent., were the offspring of pauper fathers, and 1,336, or 10.79 per cent., of pauper mothers. In 55 cases paternal and 92 cases maternal, "the dependence extended to the third generation." 1,122 had living or dead pauper brothers; 951, pauper sisters; 143, pauper uncles, and 132, pauper aunts. The number of families represented was 10,161; total number of persons in these families (three generations) known to have been dependent upon public charity, 14,901. Total number of insane in the same families, 4,968; idiots, 844; and the total number of inebriates, 8,863. Of the total number examined, 2,030, or 16.09 per cent., were homeless children; 278 homeless women; 2,081 old and destitute persons; 463 permanently disabled; 257 crippled and deformed; 303 blind; and 29 deaf and dumb. The number suffering from special infirmities—insanity, idiocy, epilepsy, paralysis and general feebleness of mind—5,611; vagrant and idle, 767.

"The conclusions reached upon the subject are:

	Number.	Per cent.
Permanently dependent	8,145	64.57
Will probably recover	1,116	8.85
May recover under proper training	1,379	10.93
Future doubtful	1,974	15.65
Totals	12,614	100.

Then follow notes on special groupings, etc., in the different county institutions.

"The examination has made it clear that by far the greater number of paupers have reached that condition by *idleness, improvidence, drunkenness, or some form of vicious indulgence.* It is equally clear that these vices and weaknesses are very frequently, if not universally, the result of tendencies which are, to a greater or less degree, hereditary. . . The element of heredity enters so largely in the problem of pauperism, that it should receive special attention. The degraded, vicious

and idle, who, when in good health, are always on the verge of pauperism, and who, at the approach of old age and idleness, inevitably become paupers, are continually rearing a progeny who, both by hereditary tendencies and the associations of early life, are likely to follow in the footsteps of their parents. . . . Few persons who have not given detailed attention to the subject realize how much of vice and pauperism, idiocy and insanity, is hereditary. . . . It appeared, in the course of the inquiry, that large numbers of those examined had been trained and educated for the poor-house, by outdoor relief, administered by law or private charity."

2. Mr. Dugdale's study of the "Jukes" is of the same kind as Mr. Hoyt's, only it is much more profound, although limited to but one family. His researches show, with remarkable perspicuity, that education in criminality leads to its successful prosecution in a variety of phases, and, for a period, measurable chiefly by the opportunity and skill of criminals in defiance of human rights and their ability to cope with the law; and, besides, with that kind of "heredity" which in all time seems to have made a brotherhood of thieves, highwaymen and pirates everywhere, whether blood-related or not. That the genius of criminality, cultivated through seven generations, separated from other society except to prey upon it, as Mr. Dugdale shows it to have been among the "Jukes," may, by its members, become to be regarded as a birth-right, we can readily believe. But that these surroundings—this environment—will so change the organic constitution of the individual physiologically, as to render him in general a fitter subject of treatment for the schoolmaster than the sheriff; that "the whole process of education consists of the building up of cerebral cells"; that this atrophy of the moral nature in criminals, which is such a prominent characteristic in the "Jukes," "rests strictly and fundamentally upon a physiological basis," and that, therefore, without qualification, "in treating the subject it must be practically accepted that the whole question of the educational management of crime, vice and pauperism, rests strictly and fundamentally upon a physiological basis"—we do not believe. Moreover, these conclusions of Mr. Dugdale are illogical—inconsistent with some of the most important facts he has adduced. It is, indeed, true that the formative capacity of the organic germ determines the subsequent development of the brain and all other parts of the organism, on the basis of a specific type. And this formative capacity is that which gives rise to the original constitution of the individual, according to the conditions —dynamical and material—of the parent organism, varying more or less from the primitive type. These variations constitute the *hereditary taints* which tend to propagate themselves from parent to offspring.

The Mechanism of Thought and Feeling, or the Habits of Mind, are also subject to the modifying influence of external conditions—the constitution of the individual, in moral and mental faculties, being no less subject to parental influences and environment than bodily taints; and, in the former as in the latter, the period of growth and development is, above all, amenable to directing influences. Thus it is that impressions firmly made on the mind of the child, lessons perfectly learned, or habits thoroughly acquired, are never forgotten;

they are as regularly maintained by the process of nutritive substitution as the substance of the brain itself. And if these influential conditions, differing from those which promote development according to the normal type, be kept up from children to full maturity of organic development and growth, the character of the individual, both bodily and mentally, is generally fixed. Henceforth it is, in a great degree, insusceptible to other influences—nothing is received except that which corresponds with the previous manner of life.

But it should be borne in mind, that of both constitutional taints and mental peculiarities, they do not perpetuate or magnify themselves indefinitely. It is the constant effort of the organism, under favorable conditions, to regain the ascendency—the normal type; and, under continuous unfavorable conditions, hereditary taints eventually destroy the family or race, as the case may be.

Intemperance, from its influence over both the body and mental organism, is a forcible illustration of the truthfulness of these conclusions. But "certain considerations," Mr. Dugdale remarks, "have made *him* hesitate as to the part which ardent spirits play in the carnival of crime." And he proceeds to enumerate other causes, such as sexual excesses, excessive study or labor, hereditary predisposition, occupations or locality detrimental to health, etc., and says: "All these questions must be answered by ascertained facts, before we can give an intelligent answer to the question: 'Is intemperance the cause of crime and pauperism,' or only a secondary cause that must be reached by well-ordered sanitary, hygienic and educational measures." And here follows a table which shows that out of a branch of the family numbering seventy-one individuals, forty-five were intemperate; but apparently because the vice of intemperance was preceded by other vices in these people, trained in all vices, intemperance is thereby made to appear in them secondary to other vices with which it is always an associate, and of which it is commonly a forerunner.

This superficial view of intemperance as a cause of crime, is all the more remarkable from the circumstance that on a previous page Mr. Dugdale shows that among the "Jukes" there was a large percentage of such diseases as have their chief formation in intemperance: insanity, idiocy, epilepsy, deformity and consumption. Intemperance apart, there is nothing in the mere avocation of the criminal primarily promotive of these diseases.

It seems to have been the misfortune of Mr. Dugdale, in this instance, at least, to have fallen into the trap which he tells us in his preface he set out to avoid: "In the genealogy of the 'Jukes,' the method employed has been to avoid method, lest I should unconsciously fall into the error of being dominated by foregone conclusions" —and yet he did it. He forgets that statistical tables are not scientific facts—that they are at most only the roadway, requiring the utmost care of construction; and he who would contribute to it, should divest himself of all preconceived considerations whatever, as to whence the figures collected—the roadway—will lead. Figures at variance with preconceived theories are of equal importance with others. And in all attempts at classification, the utmost pains should be taken not to attribute to any one cause a result which may be due to a con-

junction of several, or to the conjunction of a series of causes, to the exclusion of other data. To leave certain observed facts out of the count, by assigning them a secondary place in "tentative," or any other kind of experimental arrangements to fit certain inductions, vitiates all.

It is only equally characteristic of man, as of every living thing, to be built up according to a certain inherent type; but the organization thus built up, during the early stages of development, especially, is more or less subject to change in quality, according to the material it feeds upon: wherefore the constitutional diseases of parents are transmitted to their offspring through the blood which nourishes them. And the organism of man throughout life continues subject to the *food* and *force* acquired from without—sometimes to such a degree by environment, as to eradicate and supplant first impressions. Hence, if the conditions are good in the first place, whatever impairs them affects in some degree the organic constitution of the individual, inasmuch as, at every period of life, the organism requires continual renovation, as well as repair through the material of nutrition.

That the organ of the mind—the brain—is the outgrowth and ultimate development of the tissues and organs of which the body in general is composed, and that its office is to unite all the functions and faculties into one common bond, is among the most obvious conclusions of physiological investigation. It follows, therefore, that whatever impairs the quality of the brain, whatever hinders its healthy development or its subsequent powers of maintenance and renovation, in a corresponding degree weakens its functions, and exerts an injurious influence over both the individual and his offspring. Of all depressing influences in this regard, *the* vice of all others, which is the most powerful, and for which the State is most responsible and least excusable, is *intemperance*. Shirk it as we may under the fallacious plea of interference with public rights and fruitful industry, no one who intelligently examines the data, given in these reports without regard to classification, and others which may be obtained from the hospitals, asylums, poor-houses and prisons throughout the land, will fail to find that, as compared with intemperance, directly and indirectly, all other causes of pauperism, vice and crime are comparatively insignificant.

Extended observation more and more confirms the Statistics made by Dr. How, of Massachusetts, several years ago. The habits of 300 idiots having been learned, 145, or nearly one-half, were found to be habitual drunkards. In one instance, in which both parents were drunkards, seven idiotic children were born to them. Of similar import, Dr. W. A. F. Browne, Medical Lunacy Commissioner for Scotland, observes: "The drunkard not only injures and enfeebles his own nervous system, but entails mental disease upon his family. His daughters are nervous and hysterical; his sons are weak, wayward, eccentric, and sink under the pressure of excitement, of unforeseen exigency, or the ordinary calls of duty."* In short, the children of drunkards everywhere, are not only predisposed to intemperance, but they are otherwise weak in all their nervous functions, de-

* Principles of Mental Physiology—W. B. Carpenter, M.D., LL.D, etc., p. 370.

ficient in vital and bodily energy, incapable of keeping the will under control, and especially predisposed to idiocy and insanity.

3. Dr. Parker's paper consists of an exception which he takes to the conclusions of Mr. Dugdale in his study of the "Jukes," and the apparent conclusions of Mr. Hoyt in regard to the manner of dealing with criminals as merely unfortunate diseased subjects. For their laborious research and contributions to the statistics of crime Dr. Parker thinks they deserve the gratitude of the State, while he regrets the trend of their conclusions as being calculated to draw away the minds of those who agree with them from more important, as well as more real sources of the great evil discussed. The environment, he believes, is the great factor, and the efforts of the State must be made to change this radically, rather than lament the impossibility of making physiological changes over which it can, from the nature of things, have absolutely no control.

4. The Report of the Prison Association for the year, consists of a record of the duties performed, and a review of the condition of the penal and reformatory institutions of the State.

In an effort to summarize the number of prisoners, the Association finds the records of officials, in regard to transfers especially, so imperfect as to seriously embarrass the effort, and render a complete record impracticable. According to the Court Records, there were 3,582 convictions, and the number of prisoners in the six local penitentaries of the State, at the end of the fiscal year, was 3,712.

There are sixty-seven jails in the State, and "every year upwards of 100,000 persons are admitted" to them. These are described, in the aggregate, as being wholly unfit to "be any longer used as places of penal expiation, or for the nominally correctional treatment of offenders." As at present provided and conducted, they are "unworthy of the present state of civilization and unadapted to the purposes of public justice, . . . handed down to this State in colonial times as a heritage from the mother country."

The State Industrial Reformatory, at Elmira, is commented upon and commended as the beginning of a great advancement which should utterly supplant the system in vogue hitherto. A modification of the penitentiary and State prison system is also urged, such a modification as "will adequately provide for the young criminals, who, after repeated convictions and imprisonments, have become so mature in criminal character that they require special discipline as habitual criminals, while yet in their boyhood. The State Reformatory, at Elmira, is justly precluded from attempting to treat this class as young felons. The local penitentiaries receive the larger number of them from the courts, and the two houses of refuge admit such as are under sixteen years of age—not infrequently at great peril to the peace and welfare of the classes which are reformable in the refuge schools and workshops, while many others are consigned to State Prisons."

Under the head of "Detention Department," there were in New York and Brooklyn, for the year, 113,976 arrests and 76,905 commitments by the local authorities.

Six thousand nine hundred and thirty-four persons were committed to appear before the higher courts, and 2,447 youths were committed

to reformatory institutions by the police courts of New York city; and the number of persons held in temporary custody in the district, was 87,307.—"To as many of these prisoners and detained persons as the General Agent had occasion to visit, he conveyed such counsel and rendered such aid as the purposes of the Association permit."—The whole effort and purpose of the Association appear to be to deal with the criminals, and to do everything possible to promote their physical and moral well-being. Of inquiry into the causes of crime and how to prevent them otherwise than by reformatory processes, the report is surprisingly meagre. Mrs. Van Cortlandt's report on the State Prison for Women is a conspicuous exception. Of the 79 female prisoners who served out their terms of punishment during the year, from all but two she elicited information useful on "Improvement in the Classification of Crime." Of the 79 discharged convicts, 37 owned themselves intemperate, 29 were under 25 years of age, 65 were serving out their first term, 13 their second, and one her third. Of the two exceptions, one died on the day her sentence expired, and the other one, serving out her third term, rudely repelled all attempts at conversation.

The suggestions of the report, for more care in keeping the records, improved systems of management, more commodious, cleanly and better prisons, good libraries, etc., are all excellent in their way, but in so far as the effort of the Association is spent on merely dealing with the consequences of crime to the almost total exclusion of inquiry into *causes and how to prevent them*, it will be weak and powerless.

5. By the report of the Commissioners of Public Charities and Correction for the City of New York, for 1876, we are informed there were received into the various city institutions under their charge, during the year, 60,163 persons; and besides these, "relief" was distributed to 6,387 families of the "out-door" poor. How many, in addition to these, were administered to by the open-handed private charities, for which the citizens of New York are distinguished, and by the various private charitable institutions of the city, we have at present no means of computing; but, doubtless, more than as many more, in the aggregate, of paupers, diseased persons and criminals—a multitude equal to about one in nine of the total population of the city! To the Tombs alone, the number of committals, for the year, was 47,659! This prison, say the Commissioners, has come to be "utterly inadequate for the objects for which it was designed. . . . The practice of putting two, and in some instances three, prisoners in a cell has become so chronic, that it has grown to be as much a matter of course as if it were the most harmless thing imaginable." These cells were originally designed for but one person, and then only about half large enough. But as at present used for the association of prisoners, they are often schools in which lessons in crime are most successfully taught by the greater and more experienced criminals to the lesser and inexperienced, or, it may be, to the previously innocent. From the Tombs many are sent to the "work-house" on Blackwell's Island, where, in 1876, there were 22,845 prisoners committed, of nearly equal proportions of men and women. "*Drunkenness*," the Commissioners say, "was the *immediate* cause of the incarceration of three-quarters of the former and seven-eighths of the latter

—the *predisposing* cause in the cases of all the rest." This institution, also, "has been much overcrowded during the entire year." Social vice is also discussed, especially its relation to intemperance, and it is stated that from among its victims the largest body "that feed the charitable hospitals are the intemperate," that "five-sixths of the courtesans of the city or elsewhere are in the habit of using intoxicating liquors."

The aggregate cost of sustaining the charitable and correctional institutions under the charge of the Commissioners, for the year, was $1,150,230.55. The Police and Judicial departments, in dealing with the same class of persons, cost probably five times as much more, or more than $5,500,000. As a credit side to this expenditure, it ought to be stated the city received for the year about $300,000 for *license-fees*—for the privilege of promoting intemperance; the privilege of creating indescribable family miseries; the privilege of causing disease in a variety of forms, but especially idiocy and insanity; the privilege of fostering vice and crime—*these privileges* the city sells for $300,000 a year, and reaps in return inestimable misery, at a pecuniary cost of millions!

The terrible consequences of intemperance, the part it plays in pauperism, disease, vice and crime, if in the State of New York alone, would horrify the world! But that which it is doing here, it is doing all over the country. It is the black death of the nineteenth century, scarcely less fatal to human life than was that which swept through Europe and Northern Asia five hundred years ago, and tolerated no less blindly. Indeed, the superstitious and imaginative creations which led the people in that age of the world to attribute the cause of the diseases which swept them away to eclipses, meteors, comets and earthquakes, while they were blind to the influence of miasms, airless huts, corrupting food and personal filth, were more excusable than the people of this age and generation are in their willful blindness to the debasing, demoralizing and death-dealing devastations of intemperance, which they not only tolerate, but sustain at enormous costs. And to expect to stay the terrible epidemic of intemperance, disease and crime which now prevails, or to reform the criminal's life by the multiplication of asylums, the building of finer jails, larger and better penitentiary accommodations—even to the extent of luxuries—by this exclusive and continuous dealing with *consequences* instead of causes, would only be equaled by the folly of trying to extinguish the flames of a burning city by building a new and larger one of the same combustible material, and with more commodious hospitals for the treatment of the burned.

The Public Health.

Mortality per 1,000 inhabitants, annually, from all causes and certain special causes.

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,079,326—4 wks. end'g Sept. 15.	1205	2277	27.42	84		63	44	10	21	75	37		17	642	292	135
Philadelphia, 850,900—5 wks. end'g Sept. 29.	579	1395	16.93	55		37	34	2	22	12	74	4	4	133	203	78
Brooklyn, 528,000—5 wks. end'g Sept. 29...	651	1182	23.26	33		60	43		31	16	15	1	9	267	127	58
St. Louis, 500,000—5 wks. end'g Sept. 29 ...	343	668	13.89	21		26			8	8	11		7	85	62	37
Chicago, 460,000—5 wks. end'g Sept. 29....	484	791	17.88	31		7	34	43	4	21	7	32	6	159	59	40
Baltimore, 350,000—5 wks. end'g Sept. 29...	32)	732	24.6	20		55	13	2	18	29	42	6	3	49	86	24
Boston, 363,000—5 wks. end'g Sept. 29.....	441	854	24.46	24		23			8	14	37	2	1	238	126	34
Cincinnati, 280,000—5 weeks end'g Sept. 29	195	403	14.96	24		2	18	4	1	1	5	16		79	51	41
San Francisco, 300,000—month of Aug....	130	394	15.76	23		40			4	1	10		3	17	42	39
New Orleans, 210,000—wk. end'g Sept. 29.	28	113	27.98	2	2			2		1	1		1	8	22	5
Washington, 160,000—2 mos. end'g Aug. 31	524	894	33.52	20		5	30		3	11	23	1	4	198	103	25
Pittsburgh, 145,000—4 wks. end'g Sept. 29.	111	290	26.	10	2	6	7	7		6	14	8	2	26	21	12
Newark, 126,000																
Providence, 103,000—month of Sept.....	82	188	21.9	8		39			2	3	8		1	34	27	8
Milwaukee, 123,000—month of Sept.....	75	162	15.8	5	7	7	12		2			1	2	20	20	8
Rochester, 70,000—2 months end'g Sept. 30.	108	243	20.82	8		7					5		1	48	28	9
Richmond, 75,000—5 wks. end'g Sept. 29..	99	185	25.65	5		1	6	1	1		10		2	30	23	1
New Haven, 60,000—month of Sept.... . ..	36	88	17.6	9			7		2				1	9	10	6
Charleston, 57,000—5 wks. end'g Sept. 29..	88	126	33.92													
Toledo, 50,000																
Mobile, 40,000—month of Aug.....	30	79	21.2	8							2		2	4	8	4
Dayton, 36,000—month of Sept.....	15	35	11.66	4							2			4	5	2
Nashville, 27,000—month of Sept	27	64	28.44	4		14			1		1			7	4	2
Wheeling, 28,000																
Buffalo, 170,000—month of Aug.....	131	239	16.87	21					1	4	5			80	31	3
Knoxville, 13,000—month of Sept.....	3	15	13.5	1							1				3	1
Paterson, 40,000– month of Sept	53	102	30.6			24			7					6	10	4
Petersburg, 20,000.....																
Selma, 8,000—month of Sept.....	4	12	18.											1	3	
Elmira, 26,100—month of Sept.....	9	23	8.93	2						1	1			2		4
Yonkers, 18,000—month of Sept.....	9	25	16.66	1			2							2	5	1
Memphis, 45,000—month of Sept.....	60	154	41.06	2		1			2	2	2			32	12	1
Detroit, 115,000.....																
Syracuse, 60,000																
Reading, 40,000.....																
Sacramento, 21,000—month of Sept.....	8	41	23.42													
Minneapolis, 44,000.....																

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Foreign Health Statistics.—United Kingdom of Great Britain, during five weeks ending Sept. 15th, 28,305 births and 16,154 deaths were registered in London and twenty-two other large towns, and the natural increase of the population was 12,151. The mortality from all causes was, per 1,000, in London, 18.4; Edinburgh, 16.2; Glasgow, 21.4; Dublin, 22; Portsmouth, 19.2; Norwich, 24.2; Wolverhampton, 22.8; Sunderland, 22.2; Sheffield, 18; Birmingham, 24.8; Bristol, 19.4; Liverpool, 27; Salford, 27.4; Oldham, 22.2; Bradford, 19.8; Leeds, 20.4; Hull, 25; Newcastle-upon-Tyne, 21; Leicester, 29.8; Manchester, 23.4; Nottingham, 24. Other foreign cities at most recent dates, per 1,000: Paris, 21; Rome, 26; Vienna, 20; Brussels, 24; Berlin, 35; Hamburg, 29; Calcutta, 28; Bombay, 54; Madras, 134; Amsterdam, 25; Rotterdam, 22; The Hague, 22; Christiana, 14; Breslau, 32; Buda-Pesth, 38; Turin, 22; Alexandria, 52; Copenhagen, 16; Munich, 41; Naples, 22.

The Yellow Fever Case in New York.—We are not at all surprised at the remarks of Mr. Chater, of Messrs. Chater & King, merchants of New York, as reported in the *Herald*, in regard to the death of their employee, Mr. John F. Ohl, from yellow fever.—"He would not say that Mr. Ohl would have recovered, but when the Health Board decided to remove him on Monday his death was certain, and the medical men at the Roosevelt Hospital told the Board so. Mr. Ohl went voluntarily into that hospital on Tuesday week, Mr. Chater said, complaining of sickness, and he was persuaded to remain, though his intention in going there was to meet a physician whom he had not found at his residence. On the following Friday the hospital authorities notified the Board of Health that Mr. Ohl was suffering from yellow fever. The patient was in a separate room, had no baggage with him, as it and the clothing worn on his arrival from Florida had been sent to New Jersey, where he resided, placed in an outhouse and disinfected. There was no chance whatever of contagion, and though the patient had been very sick, had had the black vomit and was very much weakened, the health authorities removed him in an ambulance on Monday through the city, put him on board a tug in the bay, and sent him to Staten Island, and the result is what we all expected--his immediate death."—Surely no member of the Board of Health of New York believes in the personal contagiousness of yellow fever, or the public would not have been thus exposed; and so, not believing, we fail to see any force whatever in the reason assigned for the removal—"the prevailing popular sentiment." The prevailing popular sentiment of the people in New York, we have reason to believe, is and has been for many years against the personal contagiousness of this disease. Moreover, even the quarantine laws of the port are based upon this belief, verified by many years' experience. The act is unworthy an enlightened community, and in conflict with views in regard to yellow fever from accepted authorities everywhere. That Mr. Ohl was "so very sick that his death was certain to come very speedily, whether he was removed or not," so far from being a palliation of the act, simply adds to its inhumanity.

Boston.—Annual Report of City Registrar for 1876. Population, 351,247.

Births, 10,773—247 less than preceding year; ratio to population, 1 in 32.60; still-births, 491; added to those born alive, the ratio was 1 in 31.18. Excess of births over deaths, 2,570.

Marriages registered, 2,981—435 less than preceding year; ratio to population, 1 in 58.91.

Deaths, 8,203—755 less than preceding year; ratio per 1,000 of population, 23.35—preceding year was 26.20. Number of deaths under 20 years of age, 4,340—52.91 per cent of total. Under one year, 2,036—24.82 per cent. of total. Under five, 43.04 per cent. Chief causes: eleven principal zymotic diseases, 27.20 per cent.; consumption, 1,268—58 less than preceding year, and 15.46 per cent., or 1 in 6.78 of the males and 1 in 6.18 of the females, of the total mortality.

Brooklyn Board of Health declares a public funeral of any person who has died of scarlet fever, diphtheria or measles dangerous to the lives of such as may attend, and to the public health, and have therefore, and for the enforcement of Sections 140 and 142 of the Sanitary Code, adopted the following regulation:

"That in every case where death occurs from diphtheria, scarlet fever or measles, the body of deceased shall be thoroughly disinfected and enclosed in a tight (when possible metallic) burial case, which shall not thereafter be opened; that the funeral of such person shall be strictly private, and in no case shall children be allowed to attend thereat; and that the room in which deceased person was, and the clothing and bedding used during sickness, shall be thoroughly disinfected."

Cincinnati School-Rooms, we regret to learn from Professor Hough's report, to which we called attention a month ago, are almost as bad as those which are more common to our own sphere of observation in New York and Brooklyn. "A very large majority of the pupils of our public schools," he remarks, "are breathing for several hours each day an atmosphere containing more than one-tenth per cent. of carbonic acid. In many cases the degree of vitiation reaches nearly, if not quite, double that amount. . . .

"It has been stated by several observers (and experiments of my own have confirmed the statement), that air that has been once in an ordinary healthy lung contains from three to five per cent. of carbonic gas. It is very easily shown that a candle will not burn at all in such expired air. Any one becomes immediately oppressed with a sense of suffocation whenever the same, and only the same, volume of air is inhaled the second time.

"A moderately small pupil, when at study, respires about 450 cubic inches of air in one minute, all of which is converted into the kind of air just mentioned. If this be diluted with from two to four times its volume of pure air, it still contains one per cent. of carbonic gas. So that if we consider that the expired air of the average pupil contains three and one-third per cent. of the gas (which is under the actual quantity more than enough to compensate for the quantity originally present in normal air), we easily calculate that in the act of breathing for one minute the pupil makes 1,500 cubic inches of air poisonous to the extent of one per cent. But one per cent. is beyond the limit of ordinary endurance, and one-tenth of this amount soon makes itself felt by persons whose sensibilities have not been gradually blunted.

"Slight differences of opinion have been expressed by men who are regarded as authority, as to the per cent. of carbonic acid that may be habitually breathed without perceptible injury. I am acquainted with no authority that allows more than .08 per cent. But many regard this quantity as slowly injurious. Suppose we accept this number as permissible, and extend our calculation upon that basis. We find, as a result, that the pupil vitiates to that extent 18,750 cubic inches, equal to 10.85 cubic feet of air per minute. Applying this to the rooms just mentioned, we find for the time required to vitiate to this extent the air allowed to each pupil:

For the best room.....8¾ minutes
For the worst.... .....5¼ minutes

"Now if there were no ventilation at all, the above is the length of time the pupils could be safely kept in the above rooms and upon the foregoing basis. To ventilate these rooms will require, by a very simple calculation, a complete change of air from seven to twelve times per hour. The best accidental ventilation changes the air of our school-rooms less than four times an hour, and the best artificial methods cannot change it oftener than six or eight times an hour, without producing objectionable draughts.

"The conclusion necessarily follows that such rooms as the above are overcrowded under any admissible process of ventilation.

"From the foregoing, we may deduce the smallest allowable air space as dependent upon different rates of ventilation. We will take two extreme limits of change, viz.:

"Six times an hour, or every ten minutes.

"Three times an hour, or every twenty minutes.

"The average pupil vitiates to the extent of .08 per ft., 10.85 c. ft. of air in one minute. In ten minutes he will require 10x10.85=108.5 c. ft., and in twenty minutes 20x10.85=209 c. ft.

"But in the above calculations no allowance has been made for the space occupied by the pupil and other bodies in the room, and none for residuary air left in hampered spaces. Besides, both the

volume of respiration and the per cent. of carbonic gas have been placed at figures that are considered under the actual quantities. Making due allowance for the conditions just mentioned, and adding a small space for margin, we must give from 200 to 300 c. ft. as the *smallest* allowable air space for each pupil under the present methods of ventilation."

We regret the want of space for a more extended abstract of Dr. Hough's report.

Bad architecture—low ceilings, insufficient and total disregard of the direction of light, insufficient and foul privies—all in keeping with the criminal smothering process, only equally common to the public schools of Cincinnati as New York and Brooklyn, deserving the reprobation of all decent people. "It is held in law that whoever accelerates death causes it," and we sincerely trust the time is not far distant when such common inhumanity on the part of school trustees will be a punishable offense.

Paterson, N. J.—Diphtheria may now be considered a dangerous epidemic. We base our statement on official figures. Out of the ninety deaths that occurred in Paterson during the month of September, no less than twenty-seven, or nearly one-third, were from diphtheria. Since the establishment of the Bureau of Vital Statistics, there has not been such a large number of deaths from any one cause. We can only remind our readers of the necessity of doing everything possible to limit the ravages of the disease. We fear that the public school principals are not careful enough, in spite of all their assertions to the contray. We are informed that children with the sore throat have been attending some of the public schools to-day, without being sent home. Unless the authorities are very careful, this dreadful malady may increase all through the winter.—*Paterson Daily Guardian, Oct. 1st.*

St. Louis.—The new Board of Health is composed of the Mayor, the President of the Municipal Council, Hon. Chas. W. Francis, Health Commissioner, Hon. John G. Priest, Police Commissioner, and Drs. Spiegelhalter and Marthens. Most of the members have already had considerable experience in sanitary matters, and the city will probably have no cause for complaint in relation to the mode in which the work of this important department is conducted.—*Clinical Record.*

Erie: Cow Disease.—By note from Dr. E. W. Germer, Health Officer of Erie, Pa., we learn of a very serious cattle disease prevailing in that vicinity, from which several valuable cows have died. Dr. Morris Croher, veterinary surgeon, pronounces it to be *anthrax* or "*milz-brand*," a malignant boil accompanied with gangrene of the cellular tissues; but it may be cured if taken in time. The symptoms are bloody urine, dizziness of the animal and disinclination to stand up. Parties losing cows by the disease are warned against handling the bodies or getting any of the blood or matter into cuts or bruises, as it would be almost certain death.

As yet no complaints have been made by dairymen or others outside of the city.

Rochester: The Relations of Typhoid Fever to Contaminated Well Water.—The energy displayed by the Board of Health of Rochester, in informing the people of the danger of impure water, is eminently worthy of imitation in other places. The discovery last summer that over forty persons contracted typhoid fever and other zymotic diseases from a single well, led the health officer, Dr. Buckley, under direction of the Board of Health, to request all physicians in the city to report all cases of typhoid fever. Some fifty cases were reported in about two months. They were followed up by the sanitary inspectors, and the relation of their

water-supplies to cesspools, sewers and privy vaults noted. Samples of water were taken from the suspected wells, and submitted to Professor Lattimore, of Rochester University, for analysis, with the result of showing the amount of salt—chloride of sodium—in 40 wells, from 2.72 to 51.82 grains per gallon, an average of 16.78.

The source of this contamination is very clearly accounted for. Professor Lattimore remarks: "A moment's reflection will convince any one that nearly all the salt used for domestic purposes escapes by the way of two channels—the water-closet and the house drain. Therefore, we should expect, what is always found on examination to be true, that whatever sewage may or may not contain, it always contains salt.

"If sewage finds its way to a well through a porous soil, or through crevices of the rock, it inevitably brings its salt with it. Since so indescribable a compound as sewage cannot be directly measured or estimated by chemical means, we take advantage of its invariable constituent, which fortunately does admit of the most exact determination. Hence, whenever the proportion of salt in well water rises above a very few grains per gallon, contamination by sewage or house drainage may be confidently asserted, and when it reaches the figures above cited—*from five to fifty grains per gallon*—the danger becomes so imminent, that I have no hesitation in declaring that this evidence is sufficient to justify the Board of Health in the exercise of its legitimate power to protect the public health by preventing the further use of water from these wells."

Professor Lattimore's report, though long, is full of practical information throughout, and we regret our present inability to make room for it entire, but hope to before long.

Madrid.—According to the official returns presented to the municipal authorities, and published in *El Siglo Medico* of July 8th, there were, on December 1st, 1876, in the capital of Spain, 392,286 inhabitants, classified as follows: Males, 183,831, females, 208,435.

There were 164,639 minors, of whom 77,056 were males, and 87,583 females.

The number of adults was 229,627, of whom 106,675 were males, and 120,952 females.

Of the total population, 211,831 were unmarried, 137,181 were married, and 43,254 were widows or widowers.

The returns representing the condition of primary education in the capital are quite satisfactory. Of the entire population, 117,127 males and 93,034 females are able to read and write; this gives 210,161, which is 54 per cent. of the whole. There are 30,493 that can read only, of whom 11,124 are males and 19,069 are females, about 8 per cent.

There are 55,180 males that can neither read nor write, and 96,332 females, making a total of 151,512 of both sexes, or about 38 per cent. of the whole.

Although the number of those who can neither read nor write seems large, we must remember that at least half of the 164,639 minors are only learning the first rudiments, and the remaining portion are mechanics, laborers, servants, etc., who flock towards the large centres of population from every quarter of the kingdom, and are in general among the most neglected, as they are the most uneducated part of the community.

Of the number of servants, 25,000, including both sexes, are unmarried; 2,382 are married, and 1,862 have been married, making a total of 28,997.

There were, at the time, 7,471 students, of whom 6,697 were minors and 774 were adults.

The number of foreigners in the city, according to the official returns, was 4,830, of whom 2,763 were males and 2,067 females. T. P. C.

Bermuda.—Registrar-General's Report of Births, Marriages and Deaths, 1876. Civil population, 13,418: 5,092 whites, 8,326 colored.

Births registered, 432: 151 whites, 281 colored. Annual rates, respectively 29.65, 33.74. An increase in whites of 2.06, and in colored 6.67 per 1,000 over 1875. Of the whites, 78 were males and 73 females; colored, 131 were males and 150 females. Of births out of wedlock, whites, 2.91 per cent., colored, 32.65, an increase of 1.56 per cent. in the former, and 5.64 per cent. in the latter, over 1875. Still births: whites 5, or 4.46 per cent.; colored, 16, or 7.30 per cent. Marriages, 132; 43 white, 68 colored, 21 mixed—a total increase of 25 over 1875. The class designated as *mixed* were more numerous than in any previous year. In these cases the men, as usual, were white, and, generally speaking, soldiers. Deaths, 331: whites, 112; colored, 219; per 1,000, respectively, 21.99 and 26.30. The deaths of males among the whites were to the deaths of females as 143.47 to 100; and among the colored, the deaths of females to the deaths of males were as 128.12 to 100. Of the causes of death, 20 only are recorded from zymotic diseases. Tubercular diseases, 54: 13 white, 41 colored. Among the troops the number of deaths was 15—7.1 per 1,000 strength. The number of sick under treatment never exceeded 47.5 per 1,000—an unusually favorable record. The sanitary condition of the colony—which is of great interest as a winter resort, to invalids of the northern section of the United States especially—appears to have been very satisfactory; no epidemis of any kind whatever. The rain-fall during the year was greatest at Whale Bay, 66.42, and smallest at Gibb's Hill, 47.74, greatly in excess of that for 1875. Owing to the improvidence of the poor, however, in not having tanks in good repair, water was much in demand.

Temperature: highest for the year, in August, 93°.3; lowest in March, 45°.1. Mean for the year: 9 A. M., 71°.8; 3 P. M., 73°.44. Mean at 3 o'clock P. M., November to March inclusive, 66°.26. The winds were moderate; 6 on the scale of "a strong breeze" was the highest record, and that but once, October 22d. The highest average velocity was 13.6 per hour, in November, and the lowest, 4.2, in May. The Registrar-General deserves much credit for the fullness and evident care of his records, notwithstanding the interference of a "few members of this community who might possibly have been deceived by designing persons endeavoring to create a false impression respecting the general practice of dealing with the queston of births," etc. We trust that he and all other Registrars of Vital Statistics will continue to show that the highest duty of their offices consists in the most exacting accuracy.

Borax and Borax Soap.—Many housekeepers regard borax as a domestic necessity. In the laundry, especially, it has been used from time immemorial as an article of domestic economy—to save both labor and soap—as it is the only alkali which may be used freely to take out dirt, without injury to either the hands or clothing. It is also an efficient remedy to drive away cockroaches, red ants and other vermin. For this purpose powdered borax may be freely sprinkled on the pantry shelves, round the flour barrel, meal tubs, and other haunts of these pests, with certain effect, and without possible danger to any one.

Borax is also an excellent article for the toilet—for cleansing the hair, for rough skin, chapped hands, etc., etc. But for these uses, and also for the laundry, it may be most effectively used as soap. Mr. Thomas Gill, of 14 Park Place, New York, has gone into the manufacture of borax soaps extensively, using borax as a substitute for potash and soda, by which he produces soaps, for both the laundry and the toilet, superior to any other soaps which have hitherto been brought to our notice.

Murray's Charcoal Tablets are worthy the attention of all persons subject to acidity of the stomach, disagreeable eructations, bad breath, etc., as the

simplest, but at the same time the mos generally effective means they can use. They may be obtained at DITMAN'S, Broadway and Barclay Street.

Literature.

Latham's Sanitary Engineering* was the first work of the kind published in the English language, in 1873, and it very quickly and very justly attained a high reputation, which it still holds. But owing to the high price of the work, $12 a copy, in this country especially, it has had but comparatively few readers. Mr. Frost, the enterprising editor and publisher of *Engineering News*, deserves well of the public for bringing out this well gotten up American edition, at a price which will surely not fail to give this excellent work the extended circulation in this country which it so well merits. With regard to sewer construction and house drainage, especially, it is particularly replete, and elaborately illustrated, showing the various kinds and plans which have been found by experience to be the most efficient. Besides the complete republication of the original work, including plates and diagrams, the editor has added several pages of new matter, comprehending much practical information in regard to water-supply, tables and plans of estimates of proposals, specifications, etc., which add to the value of the work.

Beauty is incapable of explanatory science, hence to notice a book on it† is simply to notice a high but unsuccessful ambition to describe that which is indescribable; but, approximately, we may say at the outset, the book before us is an admirable and profitable effort, with a good but insufficient title, for the charms of beauty find their chief promotion in whatever contributes to health of body and purity of soul, conditions which are made much of by the author, and which the reader will much profit by.

But although it is not in our power to analyze the nature of beauty, we can admire a good book on it, in the same manner as we can the subject of it; and in proportion as we become acquainted with the separate parts and characters which constitute the one, we are in like manner better qualified to appreciate and admire the qualities which constitute the other. What is beauty? Beauty! But what contributes to it? Even this question overwhelms us with inexplicable efforts to comprehend the incomprehensible. The beauties of Nature which overwhelm us on every side whisper an answer in thrills of unspeakable words — something better, purer, higher and holier—and we approach the precincts of sublimity, kinship with God, *that* is beauty. Let him who would attain unto it get this book, and make himself familiar, in the most agreeable manner, with all the attributes with which the Creator has endowed the human form. He will herein learn how to avoid many evils to which flesh is not heir, and, becoming acquainted with both the ideals and realities of beauty, he will be a much better master of all the destinies which render life most charming to one's self, and most agreeable to one's fellows.

Sound Learning.—Professor S. D. GROSS, in a recent acknowledgment of a complimentary allusion to himself by the President of the State Medical Society of Kentucky, says: "It affords me great pleasure to state that I am in the enjoyment of excellent health, and that although I am now in my seventy-third year, I never possessed greater aptitude for mental labor than I do at the present

* Sanitary Engineering. A Guide to the Construction of Works of Sewerage and House Drainage, with Tables for Facilitating the Calculations of the Engineer. By Baldwin Latham, C.E., M. Inst. C. E., etc. Chicago: George H. Frost, 1877. Price, $3.00.

† Personal Appearance and the Culture of Beauty, with Hints as to Character. By T. S. Sozinskey, M.D., Ph D. 12mo, pp. 196. Philadelphia: Allen, Lane & Scott.

moment. Naturally of a sound constitution, and regular and systematic in all my habits, with a well-regulated temper, I never miss a lecture or fail to meet a professional engagement. God has been very kind to me, and in all the duties and relations of life I have endeavored to be kind to myself—in other words, I have always believed that God takes best care of him who takes care of himself."—*Louisville Medical News.*

A Public Schools Aid Society has been organized in New York, William Cullen Bryant, President, with the laudable purpose of providing poor children with needful clothing, in order to avail themselves of the compulsory education law, and so avoid the "Supplementary Charity Act," which otherwise renders children out of school liable to the constraints of truancy. Charitably disposed persons who are willing to aid this charity have opportunity of doing so by sending their contributions to Mr. Aaron B. Clarke, Secretary, 17 Bible House.

The American Naturalist continues, from month to month, to present an amount of sound instruction in natural history, in a more agreeable and impressible form, for both teachers and students, than any other periodical published in this country.

The October number, for example, contains a sketch of "The Surface Geology of Eastern Massachusetts," by W. O. Crosby; "Pseudis, the Paradoxical Frog," by S. W. Garman, with an illustration. Edwin A. Barber, in a paper "On the Ancient and Modern Pueblo Tribes of the Pacific Slope of the United States," endeavors to answer the enigmatical question, "Who were the architects of the ancient and extensive prehistoric stone structures which abound in New Mexico, Arizona, and other portions of the Southwest? S. W. Williston discusses, *con amore*, "The American Antelope;" John A. Ryder touches closely upon the Darwinian Philosophy in his "Laws of Digital Reduction;" and David S. Jordan closes the list of longer papers with a very complete article "On the Distribution of Freshwater Fishes." And then follows, as in every month, an instructive summary of items, and the progress made in the various sciences of Botany, Zoölogy, Microscopy, etc., etc. $4 a year, 35 cts. a number. H. O. Houghton & Co., Boston.

Flowers.—That hitherto pretty species of magazine literature, *Vick's Floral Guide*, is now in process of development into a new and more charming species: VICK'S ILLUSTRATED MONTHLY MAGAZINE. It is announced for January, 1878, but the bud is already largely swollen, and it seems likely to bloom about December 1st. Under no other circumstances would we be willing to relinquish the *Guide*—to health and beauty—so long nurtured by its master hand in the most delightful though most ancient of all occupations. The cultivation of flowers is not only conducive to health of body and peace of mind, but it is probably the foundation of more good will and more substantial friendships than any other human occupation. All the pleasures and ecstasies of horticulture are harmless and pure; it is an employment which, in its various grades, comprehends the opulent and the indigent, and while teeming with boundless variety, affords an excitement and emulation wholly free from contention or ill-will from any source whatsoever.

"Every herb and every tree upon the face of the earth" were given unto man for his enjoyment, and no portion of creation has been resorted to with so much success for the promotion of human delights as flowers. The rites, emblems and mysteries of religion, the achievements of nations, the capricious visions of fancy and most grotesque masks of eccentricity, have all been wrought by the hand of the sculptor or the artist on the temple, the altar, and the tomb; but plants—their foliage,

flowers or fruits—as the most graceful, varied and pleasing objects to the view, have universally been the objects of design, and have supplied the earliest, the most beautiful and the most enduring embellishments.

The pomegranate, the almond and flowers were selected in the wilderness, by Divine appointment, to give form to sacred utensils.

The rewards of merit and the wreath of the victor, from the earliest time, are alike floral. The acanthus, the ivy, the lotus, the vine, the palm, the oak—everywhere flourish under the chisel, the brush, or the loom of ancient art. And in modern, no less than in ancient times, flowers afford the most exclusive emblem of all the decorations of ingenuity and art. In their relations to the devout feelings of mankind, to medicine, poetry, love, marriage, and the tomb—they are an alluring subject to write about, more than we now have time and space for. Vick's Floral Monthly will soon cast its fragrance, and under its inspiration we shall doubtless have abundant reason to return to the subject.

Rochester, James Vick, $1.25 a year.

The Simon Testimonial Fund.—In accordance with a resolution adopted at a recent meeting of the Simon Testimonial Fund, it is determined that the funds subscribed shall be spent in a bust of that gentleman, which will be placed in the hall of the Royal College of Surgeons. Mr. Lowe, who presided at the meeting above referred to, remarked that there were no more valuable contributions to medical literature than the reports which Mr. Simon had sent out to lighten the work of the medical profession. At the present moment he believed the value of those reports was underrated, but at some future period they would be properly estimated, and the nature and value of his services more publicly recognized. It has been arranged that a small copy of the statue shall be presented to each subscriber of two guineas and upwards. Donations will be received by the honorary secretary, at 1 Adam Street, Adelphi; or at the bank of Messrs. Robarts, Lubbock & Co., Lombard Street, London.

The Functions of a General Police Force for the Extinction of Fires,* although of special application to London, like all the papers of Mr. Chadwick contains many valuable suggestions for municipal authorities everywhere. The purport of the paper is, the special advantage of combined Fire Police Service. Examples are cited in the service of Manchester, Liverpool and Glasgow, where the entire police force is constituted, with more or less variation, as a fire force, the greater proportion of the men being taught the use of the hose, and trained under the chief of the police, supervised by a fire committee. The special advantages claimed are, greater promptitude of action, certainty of concentration, prevention of panics, better protection, the saving of labor and public economy.

The Popular Science Monthly and Supplement are necessary to all persons who would know what is going on in the scientific world, for they are both thoroughly cosmopolitan in their scope.

The October number of the *Monthly* closes Vol. XI, making this an especially appropriate time to subscribe for the numbers to come hereafter; but, we opine, any one interested in science who is not already fortunate in the possession of the *Monthly*, only has need to look over the index of this number to appreciate the necessity of going back on it.

The Supplement is of the same sort, and necessary to complete the monthly curriculum. It has reached "No. VI,"

*A Special Report to the Council and a Select Committee of the Society of Arts, on "The Prevention of Fires," and on "The Water Supply of the Metropolis," by Edwin Chadwick, Esq., C.B. Second Edition. London: W. Wilfred Head & Mark.

and this last contains: "Development of the Forms of Animal Life," by Prof. Allen Thompson, M.D., LL.D., F.R.S., etc.; "Modern 'Symposium'"—R. H. Hutton, Prof. Huxley, Lord Blachford, Hon. Robert Noel; Subject: "The Soul and Future Life;" "Scripture Doctrine of Angels," by Prof. W. Robertson Smith, of the University of Aberdeen; "Practical Side of Co-operative Housekeeping," by Roswell Fisher; and half a dozen other papers on the same plain, monthly. *Popular Science Monthly*, $4 a year, 50 cts. a number; *Supplement*, $3 a year, 25 cts. a number; both, $7 a year. D. Appleton & Co., New York.

Notes on the Epidemiology of Ohio, by THOMAS MINOR, M.D., Cincinnati, is a valuable summary of the topography, area, population, geology, hydrography, altitude and climatology of the different counties of the State, and the distribution of zymotic disease, from the earliest records to the present time. The integrity of the record, however, is much impaired by the controversial character of the concluding portion, on cholera. In a faithful record of facts, opinions should have no place. And the omission of: Whether Pettenkofer of—and in Munich—is a better, and final arbiter of the cause and course of cholera in the Southwest in 1873 than the "American Cholera Commission," whom he is said to have completely refuted, or not, would have added value to the Notes.

"Public Health," an Address before the Workingmen's Institute, Des Moines, Iowa, some months ago, by Dr. A. G. FIELD, comprehends just that kind of knowledge which, of all other, is the most useful for the class of people before whom it was delivered. People—working people, especially, everywhere—need have the economy of both public and private health impressed upon them, as the safest and surest road to comfort and affluence; and the time is hastening when cultivated communities everywhere will esteem that doctor's service best, who first teaches them how to keep well.

Books Received.—Allen's Changes in New England Population; Transactions of the Medical Association of Alabama; Newell's Address on Education and Labor; Chancellor's Report on the Public Charities, etc., of Maryland; Kennedy's Philosophy of School Discipline; Transactions of the College of Physicians, Philadelphia; Transactions of the Medical Association of Georgia; Janssen's Annuairie de la Mortalité ou Tableaux Statistiques des Causes de décès et du Mouvement de la Population; Wylie's Hospitals; Phin's How to Use the Microscope; Gedding's Aiken as a Health Station.

CONSULTATIONS ON SANITARY SUBJECTS.

In order to meet the growing demand for information on all questions connected with the preservation of health, such as:

Water supply, drainage, the disposal of refuse, building sites, to seeking out the causes of disease and preventing them, and to the establishment of healthy surroundings, general and domiciliary, public and private, the Editor will be at his **Office:**

New York, 82 Nassau Street, Fridays, from 3 to 4½ o'clock.

Brooklyn, 87 State Street, Tuesdays, from 2½ to 3½ o'clock.

Other hours and places by **special appointment.**

Written applications will be promptly answered.

All communications should be addressed:

A. N. Bell, M.D., Editor of The Sanitarian,
New York, P. O. Box 1956.

THE SANITARIAN.

A MONTHLY MAGAZINE.

VOL. V. DECEMBER, 1877. No. 57.

HEALTH OF ROWING MEN.

By E. H. BRADFORD, M. D.

Dr. Richardson, in his recent book on the "Diseases of Modern Life," in speaking of boat-racing, says: "I can scarcely overrate the dangers of those fierce competitive exercises which the world in general seems determined to applaud. The state of perfection arrived at is at best artificial, and sustainable for but a brief period. The mode of life necessary for perfection is itself incompatible, beyond a limited time, with the ordinary necessities and requirements of life; and when the artificial system ceases, ... the involuntary muscles, the heart especially, remain in strength out of all due proportion, greater than the rest of the active moving parts of the organism."

After describing the symptoms of persons laboring with heart disease, brought on, in his opinion, in this way, he adds:

"By skillful training it is quite true that men may be, and are, brought to a fine external standard, but the external development is so commonly the covering of an internal and fatal evil, that I venture to affirm there is not in England a trained professional athlete of the age of 35, who has been 10 years at his calling, who is not disabled."

This expresses well an opinion quite generally received by the public and by a large number of intelligent medical men. The only one, however, who has attempted to investigate this subject by the employment of the usual method of clinical investigation is Dr. John Morgan, of Manchester, England ("University Oar," by John E. Morgan, M.D.)

He collected the names of all the participants in the university races between Oxford and Cambridge, and by direct inquiry learned the condition of all who were living and the cause of death of those who had died. The conclusions he draws from the facts collected differ from the views held by Dr. Richardson. The analysis, he says, "seems to show that if harm really was done by too great a strain being laid on the system in early life, that harm may generally be accounted for either by the existence of constitutional unsoundness, or by some deviation from the commonly accepted laws of prudence."

Out of 294 Oxford and Cambridge oarsmen, whose condition was

accurately ascertained by Dr. Morgan, 115 considered themselves benefited by their exertions; 162 were in no way injured; 17 thought, or it was thought by their friends, that they were injured. The cases of these 17 were carefully investigated.

1 had pneumonia 1 year after the race, but was alive and apparently well 20 years after.

1 had an enlarged heart 20 years after the race.

1 had an "abscess" of the elbow-joint.

5 had died of consumption.

1 died suddenly 30 years after the race, perhaps of heart disease.

5 supposed themselves injured, but enjoyed fair health for 18 or 20 years after their racing days.

3 thought they had suffered from the sudden change, on giving up an active out-door life for a more sedentary one.

Calculating the number of years lived up to 1869 by the 294 boating men, and the expectation of life at that time of those living (according to Dr. Farr's life tables), Dr. Morgan found the sum of years exceeded the number of years of the expected life of the same number of healthy men at the age of 20.

For example, the years lived in 1869 by the crews in the different races from 1829 to 1859, added to the expected life in 1869 of all living (deducting for unsound lives), amounted to.....10,778 years.
The expectation of life of these men at their 20th years
was, collectively.....10,240 "

538 "

These lives were not shorter, but longer by 538 years (or 2.2+ years a man) than could have been predicted at the time of their rowing.

I have succeeded in ascertaining with a fair degree of certainty the condition of health of all graduates of Harvard College who engaged in the inter-collegiate regattas up to the year 1870.

These facts are not as valuable as those collected by Dr. Morgan, as rowing is a comparatively modern custom in American colleges.

It is hoped, however, that they may be of sufficient interest to call attention to a subject which must be left to future investigations for more thorough examination.*

From the classes at Harvard College between the years 1852 and 1876, there have been 150 rowing men in the annual university races between Harvard and Yale.

Of these, 113 were from the classes between the years 1852 and 1870 inclusive.

The 37 oarsmen in the classes between 1870 and 1876 are rejected, as but a comparatively short time has elapsed since their boat-racing. There have been no deaths in their number, and they are believed to be in good health.

Of these 113, 10 were killed in the war, 2 died of disease contracted in service.

*These facts were ascertained by direct inquiry of the men themselves, of the class Secretaries and from personal knowledge. None except participants in the university races between Harvard and Yale College are here considered—it not being certain that sufficient preparation was made in all cases for the class and scratch races to justify including the oarsmen in this investigation.

These deaths may be considered due to an unusual cause.

Of the remaining 101, 11 have died: *1 Bright's disease, 5 consumption, 1 "intense neuralgia," 1 suicide, 2 deaths from accident, 1 cause of death unknown.

Of the 90 living, 4 are invalids; 1 was well until 23 years after graduation, disease not attributed to rowing; 1 is consumptive, considered hereditary by the patient, but the tendency was, perhaps, aggravated by rowing; 1 nervous prostration, perhaps brought on by rowing; 1 insane, the result of dissipation.

Of the remaining 86, 67 are known to be in perfect health; 19 are not reported as sick by the class Secretaries, but they have not answered the circular inquiries as to their health.

The average age at the time of graduation may be considered 21 years. The expectation of life at this time is, according to Dr. Farr, 39 years.

The expected lives of these 101 rowing men, at the time of their graduation, is 3,939 years.

The number of years already lived† by these 101 men, added to the expectation of life of the 90 living (calculated in the accompanying table) at the present time, is 3,402 years. There is, therefore, an excess of 63 years.

It must be admitted that great value cannot be placed upon these figures, as the number dealt with is not large, and as only 25 years have passed since the introduction of the custom of rowing in Harvard College. The argument can also be urged against this method of reasoning, that the oarsmen in these contests are necessarily picked men, and therefore the ordinary rates of expected life, as calculated for the average man, are too low for marked physical perfection.‡

These figures, however, as far as they go (coinciding as they do with Dr. Morgan's results), certainly show that the evil effects of the practice of rowing and training are not as evident as is claimed by many.

The injurious effects usually attributed to boat-racing are:

1. Severe exhaustion after a race.
2. Disturbance caused by the change from the active life of regular rowing to the habits of ordinary life.
3. Consumption—emphysema.
4. Heart disease.
5. Nervous debility.

1. It is a general opinion that the first is very common. In almost every newspaper report of a boat race, this casualty is mentioned as having occurred. This seems not to be the case. Dr. Morgan could find no case in all the Oxford and Cambridge races.

---

*The causes of death have been taken from the respective class records.

†The inquiries were made at the end of the year 1876.

‡ This objection does not, however, apply to Mr. Morgan's figures. He says (loc. cit., p. 25): "If, instead of adopting Dr. Farr's calculations, we take the tables of some of those insurance offices which profess to accept none but select lives, we still find the oarsmen living beyond these limits."

TABLF.

Of the 101 oarsmen:

11 are dead.
Sum of years lived by them after their 21st year..... 84
90 are living.

101

Of the 90, 86 are well.

		Sum of years lived since 21.		Sum of Expected Life in 1877.		
1	is 46 yrs. old.	25 yrs.	+	22 yrs.	= 47 yrs.	
6	are 45 " "	144 "	+	138 "	= 282 "	
2	" 43 " "	44 "	+	48 "	= 92 "	
5	" 41 " "	100 "	+	130 "	= 230 "	
10	" 40 " "	190 "	+	260 "	= 450 "	
2	" 39 " "	36 "	+	54 "	= 90 "	
8	" 38 " "	136 "	+	224 "	= 360 "	
6	" 37 " "	96 "	+	168 "	= 264 "	
4	" 36 " "	60 "	+	116 "	= 216 "	
5	" 35 " "	70 "	+	150 "	= 220 "	
2	" 33 " "	24 "	+	62 "	= 86 "	
13	" 32 " "	143 "	+	416 "	= 559 "	
10	" 31 " "	100 "	+	330 "	= 430 "	
2	" 30 " "	18 "	+	66 "	= 84 "	
5	" 29 " "	40 "	+	170 "	= 210 "	
5	" 28 " "	35 "	+	175 "	= 210 "	
86				3830		3830

4 are invalids.

90

No. of years lived since 21st year, added to present expectation of life:

25 + 5 = 30
10 + 2 = 12
11 + 10 = 21
15 + 10 = 25

88 88

Total number of years lived by the 101 oarsmen since their 21st year of age, added to the expectation of life of the survivors in 1877..... 4002

Sum of expected years of life of 101 healthy men at 21 years of age (calculated according to Dr. Farr's table)..... 3939

Surplus of years for the 101 oarsmen..... 63

Inquiries made of the leading oarsmen of both Harvard and Yale failed to discover that there had been any case in the regattas between these colleges.

*Two instances are reported of men who were said to have been

*One of these was in a class race, not in a university race.

sun-struck, without any permanent injury, however, as one rowed subsequently in three inter-collegiate races, and in a race with the Oxford four, and the other in a letter states that he considers himself benefited by his rowing career.

In one of the college regattas a few summers ago, one oarsman, not a student of either Harvard or Yale Colleges, fainted during or after a race. He had been suffering from a felon, which had deprived him of sleep for four or five nights previous to the race, and his attempting to enter the regatta may be fairly considered a violation of the laws of common prudence.

The case of a professional oarsman who died during a single scull race is well known. It is probable that the exciting cause of death was the rowing match, as no evidence of constitutional disease was found at the autopsy. I have not learned whether his habits were good, or whether he had made careful preparation for the physical match he was to engage in.

In a few of the college "scratch races" or "scrub races" (boat races rowed by men without any preparation), there have been instances of the "giving out" of an oarsman.

The firmest believer in the benefit of rowing and of regattas upon the health of the participants, will admit that men attempting feats beyond their strength may be injured. If men of courage, they are often stimulated by the example of their rivals to efforts which they are unequal to. It is granted that rowing in races without preparation is dangerous; but it is claimed by the advocates of rowing that men who prepare themselves by gradually increasing daily exercise, at no time beyond their strength, will become in time, if their training has been careful, equal to all the effort necessary for a race; that the danger of over-exertion is very small, and entirely counterbalanced by the physical benefit acquired in preparation.

2. The change from the "artificial system of training to the habits of an inactive life," is considered by Dr. Richardson particularly injurious. Whether it is correct physiology to suppose that "the voluntary muscles will lapse down 'to the ordinary tone' after the cessation of training, while the involuntary muscles, the heart especially, cannot" will not be discussed here. It seems, however, as if the danger he describes is somewhat exaggerated. From all Dr. Morgan's 294 correspondents, but three mentioned that they had felt the want of the muscular exertion after being deprived of it, and, from their letters, they do not appear to have suffered much from the change, and do not complain of the symptoms described by Dr. Richardson.

One of the boating men of Harvard College mentions, in answer to inquiries as to the effect of rowing and training upon his health, that the change of manner of life after a race brought on, in his case, an attack of typhoid fever.

If we accept the present views as to the etiology of typhoid fever, we must believe that the disease had its origin from some other source than a change in the habits of life, though this may have been active as a secondary cause.

3. Dr. Morgan did not find consumption remarkably prevalent among the Oxford and Cambridge oarsmen. Out of 39 deaths among the 294 oarsmen, there were 7 deaths from consumption; that is, 17 per cent. of all deaths were due to consumption. According to the

report of the Registrar-General, quoted by Dr. Morgan, 28.9 per cent. of the deaths of males between the years of 1848–1854 were from consumption.

Of the 101 rowing men of Harvard College, 5 have died of consumption, and one of the living is known to have the disease—that is, 6 cases among 101 men, nearly 6 per cent., or 60 in 1,000.

In the medical statistics recently published by the War Department (Statistics Med. and Anthropological of the Bureau of the Provost-Marshal General's Bureau), we find that among 1,000 drafted men, the number rejected for phthisis was, in all occupations, 18+

Among unskilled workmen	14+
Among skilled workmen	22+
Among mercantile men	37+
Among professional men	45+

Of the latter class the rate varies in different professions; from 82 (in editors) to 42 among lawyers, 12 in musicians.

Sixty cases of consumption in 1,000 men give a high rate as compared with the rate in all occupations; but considering that the individuals are college graduates, and after graduation probably have become either lawyers, whose rate of phthisis is 42, or physicians, whose rate is 60, or editors, whose rate is 82, or merchants, whose rate is 47, or clergymen, whose rate is 33, the rate does not seem very high. The number dealt with is small, and there is a possibility that an unusual number of persons with hereditary tendency to consumption is by chance included.

Of the 6 cases, 1 died 13 years after the close of his rowing days, his health for 10 years being excellent; 1 died 7 years afterwards, his health being good for 3 or 4 years after the end of his rowing days; 1 died 7 years afterwards (the previous condition not known); one died 1 year, and one 2 years after his last race. In 3 of these 5 cases the disease was known to be hereditary, in 2 the lives were irregular.

In a letter received from the oarsman who is still suffering from consumption, he states that consumption is hereditary in his family. His first hemorrhage occurred 2 years after he had stopped boat-racing.

I have been unable to find any facts in regard to emphysema among rowing men.

4. Dr. Morgan reports 3 deaths from heart affections among the 294 oarsmen whose condition he examined. One reports, 20 years after his rowing days, that he is suffering from an hypertrophied and dilated heart. There are, therefore, 4 cases among 294 men, or 1.36 per cent., or 13.6 cases among 1,000 men.

According to the medical statistics of the drafted men during the American civil war, the rate of heart disease among 1,000 Englishmen was 13.39; 1,000 Americans, 15+; all nativities, 14+. The ratio of heart disease among the English oarsmen is therefore slightly higher than that among the English drafted men during our war, and less than that of all nativities.

Our inquiries as to the frequency of heart disease among the Harvard rowing men have not been so careful and thorough as to enable us to give any positive statement as to the number of cases.

In a number of the Boston *Medical and Surgical Journal*, a year ago, a writer mentioned having met with two cases of disease of the heart

induced, he believed, by training and rowing. There was hypertrophy and decided valvular disease. The condition before the rowing days was not stated.

Hypertrophy of the heart is asserted by good authorities to occur after severe and long-continued exertion (Peacock, Deutsch Da Costa Fraentzel). Rokitansky, Bamberger, Traube, think it probable that it may result from such a cause. Stokes, Skoda and Duchek have never met with such a case, and the two latter deny that it occurs. It is certainly rare. Hypertrophy, caused by a valvular lesion, is quite common. In a given case, therefore, of valvular disease with hypertrophy, which has not been watched from the commencement of the cardiac trouble, the probability is decidedly in favor of the opinion that the hypertrophy is not due to exertion.

5. It is often said that the ill effects of rowing and training are not immediately perceptible, but that several years afterwards the early strain upon the constitution begins to tell, and there results what is popularly called nervous prostration.

Dr. Morgan was not able to find such a result among his 294 correspondents.

In answer to circulars sent to the Harvard rowing men, making inquiries as to their physical condition, I received 37 replies.

Of these, 19 considered themselves benefited in health by their rowing and training; 12 stated that they were not injured; 3 had no positive opinion; 3 thought themselves injured.

Of these latter, 1 is the case of consumption already spoken of.

The second has been an invalid for several years. His illness seems to be rather obscure in its nature. He attributes it to other causes than his physical exercises, but thinks his health has been impaired by over-exertion. His boating career began at 15, and continued until he was 20 years old.

The third is in good health, but thinks his health after rowing was not so good as if he had not rowed.

One of the 11 who died is said by the class Secretary to have been regarded by his friends as injured by rowing. His death is attributed to intense neuralgia.

The health of professional oarsmen is said to be poor. This, as far as I know, has not been statistically proved. It is unjust, however, to attribute the ill-health of this class of men, granting that is established, to their exercise, without more careful investigation. It is well known that irregularity of living is very common among them, and the sickness often ascribed to their athletic life may perhaps be more properly attributed to dissipation. An examination of the health of race-horses would be interesting, as the factor of irregular living does not disturb the problem, and few professional athletes are subjected to greater and more continued physical strain. I have been unable to find any exact data on the subject, but the record of the American turf seems to be against the opinion that the physical constitution is undermined by repeated violent physical exertion.

A gentleman who has been for years prominently and actively engaged in stock-farming, writes in answer to inquiries made as to this fact: "The fastest time ever made by an American trotter has been the result of long training, and after the animal has passed the age at which our ancestors used to condemn a horse as unfit for further use."

Although the few facts we have been able to collect are insufficient to prove that the practice of rowing and training is beneficial to the health, they appear to show that it is by no means certain that rowing and training are as injurious as is often supposed. A belief in the injurious effects of training is fostered by the commonly received opinion that it consists of an abnormal process, which is likely to cultivate a fine external appearance, but at the expense of a drain on the constitution. The custom of sweating, purging and deprivation of liquids at one time was regarded as essential to athletic success.

At the present time, however, as far as I have been able to learn from the captains and "coaches" of the different college crews, the practice of training simply consists in living in a healthy manner, avoiding all excess, and taking a required amount of daily exercise, which at no time should be enough to exhaust, and which, as the strength develops, is gradually increased. Previous to a race, when any slight indisposition would be of importance, the men of the crew give up every other occupation, and devote their time wholly to the cultivation of their health and strength.

The diet of the Harvard crew, during the training previous to the race in the past summer, was exactly what would be suitable and beneficial for them at any time when it should be important for them to keep themselves in good health. During the three weeks of this "abnormal" state of training, the men gained from two to three pounds apiece, which certainly does not look like undermining their constitutions. Their record as a crew was good, as they were successful in two well-contested races, and they were considered by their coach as well "trained."

It has already been stated that a majority of those rowing men who gave an opinion as to the effect of rowing and training upon themselves, believed that it had been beneficial. If it is safe *"credere experto,"* the following letter will be of interest:

"In answer to your inquiries, I give my experience in training and racing. As a member of my class (1862) crew I trained and rowed during the season of 1860, and I doubt if a crew ever trained more strictly, both in diet and hard preparatory work in gymnasium exercises, daily running, etc., than did ours. We rowed four hard-fought races—two being against professional crews, and two college races—in all of which we were victorious. I suffered no injury from either, the same being true, I believe, of each member of the crew. Such freedom from strain and injury, as well as our victories, I attribute to our *strict* and *systematic* training, without which I do not believe a crew can race without great liability to injuries to health, as well as forfeiture of success. A crew, to 'live out' a *severe* race to the end, must be thoroughly trained, and unless so, I consider there is great danger of over-exertion and injury. I may add, that the good health and strong constitution which carried me through eight months of imprisonment during our last war, when 71 per cent. of my comrades died by exposure and harsh treatment, I have always maintained was to be largely credited to my college training, which I kept up, more or less, through nearly all my course. Hence I believe rowing is always beneficial; training (which need not necessitate racing) always beneficial; racing, unless preceded by a thorough, systematic and strict training, very liable to be injurious."

DISEASE AND DAMP SOILS.

Our esteemed contemporary, *Public Health*, in issue for September 28th, after having republished in previous numbers, from THE SANITARIAN for September, Dr. Bartlett's excellent contribution on "Causes of Disease in Country Homes," makes the following remarks as being quite as applicable to England as America:

It is a common notion that the country is more healthy than the town, and we readily grant that, in the elements of pure air and quiet, the country has advantages; but it is not true to affirm that the country is always the healthiest. As Dr. Bartlett says, if an old resident rebuilds his house, he does so on the old site, for the sake of association, or more urgent motives. The site may be marshy, always saturated, or badly drained; yet it is considered preferable by the old occupant. Again, the city merchant who retires into the country selects a secluded spot, surrounded by trees; it may be badly drained or close to some sewage farm; but, being in the country, it is considered above suspicion—on sanitary grounds, at all events. If a homestead is contemplated, the farm buildings will be placed close to the house, and the farm-yard so near to the windows that the effluvium of the manure is constantly the evil to be borne, if not grumbled at. All that affects the substratum, the drainage of the soil and the position of the house, is too generally disregarded, in the idea of enjoying country air. The proximity of a farm-house is even, by some people, imagined to be conducive to health, so singularly ignorant of sanitary laws are they. Most country cottages have pig-sties, and the floors of these are a prolific source of nuisance; but occupants are under the impression that the unpleasant and pungent smell that is engendered is not harmful. In fact, it is strange to find that a country air strongly and constantly diluted with noxious gases is believed by many to be healthier than a town air free from these nuisances. But land-drainage is, perhaps, even more a source of unsanitariness in country districts. In 1852 a Sanitary Report was published, in which certain propositions were laid down, showing that "excess of moisture, even on lands not evidently wet, is a cause of fogs and damps;" that "dampness serves as the medium of conveyance for any decomposing matter that may be evolved, and adds to the injurious effect of such matter in the air; in other words, the excess of moisture may be said to increase or aggravate excess of impurities in the atmosphere;" that "the evaporation of the surplus moisture lowers temperature, produces chills, and creates or aggravates the sudden, injurious changes of temperature by which health is injured." Now these propositions have reference to conditions that exist more largely in rural than town districts. We admit the agricultural land-drainage that has been undertaken within the last half a century has considera-

bly reduced the evils in certain parts; but we contend that in other cases it has tended to flood imperfectly-drained soils and low situations, of which every country may supply numerous instances. This is because the drainage has been only partial. Malarial disease, tuberculous consumption, typhoid fever, and various other functional diseases, are well known to spring from a high level of ground-saturation. Wherever this condition of ground moisture has been reduced by artificial means, these types of disease have been found to diminish in their intensity; and it is chiefly by the mists generated by this constant dampness that we must account for the aggravation of the symptoms in those maladies. It is a fact that the most fertile soils are those which give rise to zymotic diseases, while those of sand, chalk or gravel, and of a porous quality, are the healthiest. Now it so happens that persons generally build their houses in the most fertile districts, and are thus selecting situations disposed to the conditions favorable to disease. The polluted water from barnyards, cess-pools and ditches percolate the soil, and contaminate the subsoil water, which rises near the surface in low districts. A recent authority states that epidemic disease is caused from miasms and contagious or poisonous gases and germ cells, the latter being developed where miasm is produced. Under such circumstances, then, the residents of rural localities are exposed to a source of disease more virulent than the dwellers in a large city provided with efficient drainage. If Sanitary Inspectors and Medical Officers were to examine and return, in their several districts, the height of the subsoil water; the nature of the soil—whether porous or water-logged; its substratum and drainage, we might at least get some important data bearing upon the connection of disease and dampness. At any rate, there is sufficient evidence to warrant the conclusion that the sanitary condition of the soil and subsoil—namely, their dryness and porosity—is one of the greatest, if not the most important agent, in preventive medicine, and that the dampness and mistiness of any locality has far more to do with the prevalence of epidemics than mere infection carried by the agency of the air.

———o———

Preservation of Fruit.—De Luca states in the *Repertoire de la Pharmacie*, 1876, as the result of repeated experiments, that fruit will keep for a longer or shorter time in close vessels, whether the air space within the vessels is filled with carbonic acid, or hydrogen, or ordinary atmospheric air, or is a vacuum; that fruit so placed undergoes a sort of slow decomposition by disengaging carbonic acid and sometimes hydrogen, and forming alcohol and acetic acid without the interposition of a ferment; that in air-tight vessels the process of decomposition is less complete, owing to the increased air pressure set up within the vessels by the disengaged gases; that flowers and leaves act like fruit under the same conditions; that fruit, flowers or leaves in closed vessels may be kept in a state of imperfect preservation for some time, either in carbonic acid, hydrogen or atmospheric air, by increasing the air-pressure sufficiently—but, although these outward appearances may remain unaltered, the taste and smell will be impaired.

VITAL STATISTICS.

By E. L. Boothly, M.D., Wisconsin.

Written for the Pierce County Medical Society.

In 1639, two hundred and thirty-eight years ago, the State of Massachusetts, then a colony of Great Britain, began the then rare practice of recording all marriages, births and deaths within her boundaries. She has never departed from this practice. Until within a few years, no other State has followed her footsteps.

In 1869 Massachusetts organized, by an act of her legislature, a State Board of Health. She was also the first in this movement. This act gave a fresh impetus to the old registry law.

As a result of these early movements, Massachusetts to-day stands at the head in all sanitary matters. No State in the Union has as perfect knowledge of the health and life of her citizens. In 1876 Wisconsin followed in her footsteps, being the tenth State to commit herself to this work.

Since which time other States have followed, until about one-half the States in the Union have Boards of Health and of Vital Statistics, and are earnestly engaged in the work.

I trust that there are none so ignorant as not to know that some circumstances and localities are more fatal to people than others. In a certain section a given disease or type of disease flourishes year after year, at the sacrifice of human life; in another locality another disease occurs—and so on over the country. Who knows, in this State, exactly where these unhealthy localities are, and what per cent. of the inhabitants are annually carried off by these pestilences? Who knows the amount of sickness or the *cost* of disease and death to the people of the State during the year? Who knows, only by vague and unreliable report, where to emigrate, that our diseased organs may recover their wonted health and vigor?

We have only a very uncertain knowledge of the medical geography of our country. We have no complete statistics upon which we can depend. We cannot plan any definite action, for we have not sufficient data. We are lacking, therefore, in an essential element of government, for the first duty of government is to protect the health and the life of its citizens; and how can the life and health of the people of Wisconsin be protected by the State government successfully, unless we have a collection of facts upon which we can base a plan of action?

The success of any government depends upon the health of its people. The *people's* health depends upon their knowledge of sanitary science and "*an accurate basis of facts derived from a large experience, tabulated with proper precision, lies at the very foundation of sanitary science.*"

Therefore, to have a successful government, with its healthy, happy and prosperous people, well read in the laws governing health and disease, we must first establish that "*accurate basis of facts.*" Vital statistics, as that basis, then, becomes the chief corner-stone upon which the builders may erect the structure of successful government, whose chief features will be the health, happiness and longevity of its people, endowed with a mental, moral, physical and financial prosperity unobtainable in any other manner.

The great characteristic of modern civilization is State Medicine.

Statistics are growing in favor year by year with all people, as they see the value and importance of exact knowledge. It is next to the impossible to convince any man on any question, unless he can be shown the exact figures.

And when we arrive at the great and important question of life and death, we readily see the importance of statistics; for the question resolves itself into a problem in mathematics, which requires a *fact as a basis*, from which fact we can easily deduce correct conclusions. The value of a deduction from a fact is of far greater value to the people of a State when the question concerns their life, than an opinion founded on a purely hypothetical basis.

No business can be successfully conducted unless an accurate and systematic account is kept of all the facts connected with it.

No banker, or merchant, or other successful business man, attempts any extensive or profitable undertaking without keeping an accurate account of all matters pertaining to the business.

An accurately kept set of books is his sheet-anchor. By them, and them alone, is he able to determine whether or not he is prospering. By them alone can he be successfully guided in forming plans for future action. An accurate system of book-keeping is the foundation of commerce. It cannot prosper otherwise. Neither can a government prosper unless it be thoroughly posted regarding the conditions of all the interests bearing upon it. Except, therefore, by means of statistics, we cannot, with any degree of certainty, know whether we are gaining or losing control over a disease, or whether our efforts generally are better or worse, more or less successful, than in the past.

The commonly spoken opinion of the majority may be that there is a degeneration of the race going on, and that the average age of mankind is decreasing; and without accurate statistics we would never be able to ascertain whether such reports are true or false.

In this and no other way can we show clearly the peculiar and interesting influence that climate, occupation, sex, and the various conditions of life, have on mortality.

It is a question of vital signification to our State and to all governments, that they be possessed of *all* facts bearing any relation to the mental, moral, social, physical or sanitary conditions of its citizens, as well as upon the financial condition.

The fact is patent to all, that the finances cannot be in a sound, healthy state, and the people diseased mentally, morally or physically.

Therefore, to a proper understanding of all the various conditions of life, and that a basis for future action be procured necessary to such understanding, it becomes of paramount importance that the

State keep a record of vital statistics—a record of marriages, births and deaths; causes of deaths; with all epidemic, endemic and contagious diseases, which show effectually the various phases of existence, and thereby prove a source of unlimited beneficence to every individual.

One of England's great writers said: "It is the first duty of a State to attend to the frame and health of a subject. In time the fate of a nation will depend on the health and strength of its people."

The custom in this country has been to a great extent to transmit to posterity stocks, bonds, mortgages, and an ambition to gain property and rise above and be independent of physical labor, rather than leave them the better legacy of a knowledge of themselves—a knowledge of disease and death.

Why have nations failed to teach this better knowledge to their subjects? Because of an imperfect civilization, ignorance and greed.

Absorbed in the politics of a party, or in manufactures, agriculture, speculations, or other means to acquire wealth, the people—yea, the leading educated men of the day—the clergy, the members of the legal and medical professions—have forgotten the conditions of a high social state and healthy life. Philanthropic societies, composed of generous men and women, called into existence for the definite purpose of relieving want and suffering, who have largely and freely given of their abundance, have failed to a certain extent, though unmeaningly, in their efforts. They relieve individual want for a time, they do not remove the cause, and they are left in ignorance to do the same generous acts over and over again, which might not have been, had their efforts been put forth in the proper direction. The prevention of disease, and thereby the want and misery it entails on the human race, is the true province of the philanthropist, as well as of the physician; and every means they can honestly lay their hands to, should be used to elevate their fellow-men to a higher state and a healthier life.

"In its practical application to communities, sanitary science in this, as in every other particular, has the same difficulties to overcome here as it has encountered everywhere."

"Restrictions in long-established habits of life and business are submitted to slowly and with reluctance."

Personal convenience rises in antagonism to the principle which requires each member of society to yield something of individual comfort to the general good. The people require to be educated to such necessity, and the importance of the sacrifice of their own convenience or personal interest. They are to learn that the record proof of the birth, death or marriage of any or all persons, may become of great importance from a legal stand-point—that the statistics derived therefrom furnish a sure index to the prosperity of the State, in the number of births and marriages; that they supply data upon which governments, communities and life assurers may base their action; and that they furnish knowledge of unfavorable localities and conditions, which, when known, may be avoided, and the struggle for life be rendered easier and more certain of success.

To a thoughtful man it appears as necessary that there be a

registration of births and deaths for the purpose of preserving the rights of individuals, as for the registration of deeds for the same purpose. The main difficulty is to convince the masses that it is for their individual benefit, and as soon as they can see this point, the matter is accomplished.

This, however, must be done by a system of education, and until the education of the masses in this particular shall become more perfect, a profession ever the first in all noble and philanthropic movements is appealed to by the State, to assist in this important reformation.

Shall we, as a profession, as individuals, retard a good work, which promises great benefits with but little trouble on our part, by withholding or refusing our assistance?

This is a work of humanity that interests every man. "It is a work replete with truths and matter of the highest, most useful and interesting character, and therefore concerns every one of intelligence, or of scientific or literary culture. It is a work without which *disease and death, ignorance and crime, poverty and depopulation, run riot,* and therefore it is a work that interests us all.

Neither must we feel discouraged, if, as year after year is woven into the web of time, our system is not in a perfect working order; but work together with a purpose, determined to succeed, and fight it out on this line, if it takes till time shall cease to be. England, which established this system over three centuries ago, to-day says it is still incomplete and unsatisfactory, though better than any other extant. Do they propose to abandon it on account of its defects? By no means. It has been of limitless value to them; and I opine had they not established such a system, they would not have been held and honored as the greatest and most powerful nation on the globe. Since the year 1549 this system has existed in Switzerland, with the greatest practical benefits. In Massachusetts it is the most popular branch of government, and the law is considered the most beneficial of any ever passed by that commonwealth. In the last report of the Secretary of State of Wisconsin, page 42, the total number of marriages, births and deaths given is as follows—viz.: Marriages, 9,566; births, 5,158; deaths, 925. Returns were received from every county, says Secretary Doyle, but appear to be very incomplete, and doubtless are so. On page 166, in same report, we find the returns by counties tabulated. Out of the 59 counties in the State, but 23 report births, and but 19 report deaths, leaving more than 30 counties minus a birth or death, certainly a very incomplete report. The report for Pierce county for 1875 tells us there were 139 marriages consummated, and it further tells us that there was not a birth or a death during the year in the county.

St. Croix county reports 180 marriages, and she tells us that she has not lost or gained a single soul for the year. Truly, this St. Croix Valley must be a wonderful county—nobody dies, nobody is born, yet everybody is being married.

Dane, our capital county, with its population of over 50,000, where nearly 900 marriages occurred in 1875, is another wonderful county, for nobody was born and nobody died for a whole year. Why is this?

Are we afraid to show to the world the conditions under which we live? Who is to blame? Not the Secretary of Sate, surely, for he has urged in this report, and in a circular to each justice of the peace, clergyman and physician in the State, that they comply with the requirements of the law. The clergy and justices of the peace have attended to their duty well and nobly, as the report shows. The medical profession, however, I am sorry to say, are far behind in this duty. And yet for every birth and death the physician receives more than double the fee of either the clergyman or justice for marriage.

Is our profession avaricious? Or is it the time and trouble of properly filling the blanks that deters so many of them? It is but little trouble to properly fill the necessary blanks for the months, and will occupy but little time. Therefore, why object? You can but acknowledge that the hardship asked of you is small, and the benefit to be reaped great.

When the law creating the State Board of Health and Vital Statistics was passed by our Legislature in '76, not a dissenting voice was heard in either of the legislative halls. Both political parties favored its passage, for it was not a political move, but one for the people, introduced at the instance of the State Medical Society, and we, as a branch of said Society, ought to lend our aid in the furtherance of the good work begun by them.

Vital statistics, as I have before remarked, are the very foundation of hygiene. They teach us how to live mentally, morally and physically.

Perhaps I would not be far from the truth, did I state that about one-third of the deaths are caused by diseases of the respiratory organs.

Would you ever inquire if any of these deaths were caused by improper clothing or poor ventilation? How many of these deaths could have been prevented had we been possessed of reliable facts regarding their history and etiology? How shall we ever become possessed of these fundamental principles?

Next in frequency to diseases of the respiratory organs come those considered almost wholly preventable—viz.: zymotic diseases.

These are under our control, thanks to modern science. Said the renowned Dr. Rush: "Oppose the very *beginnings* of disease." Again he says, "For all natural evil, the Author of nature has furnished an antidote."

The means of preventing disease in a large percentage of cases is within the power of the sanitarian as surely as it is in the power of man to extinguish a fire, or for a Franklin to use the lightning of the heavens. Death is caused by agencies which directly surround us—there is no miracle connected with it—the causes are easily discoverable by the sanitarian, and by the pathologist. We have it within our power to ward off the cause of many diseases, and double, and even treble the average age of man.

Accurately tabulated statistics of disease and death teach that causes are operating to thin our ranks, where we may look for the cause—and how we may remove it: shall we be the last of our profession to assist in this work of philanthropy and sanitation?

When we see what is being done by our sister States, and the ben-

efit already resulting therefrom; when we examine the improved condition of the masses in consequence, the average age lengthening, pestilences disappearing, and the true field for the physician just being opened: does it not behoove us to assist in this work?

In a recent letter from Dr. Griffin, President of the Wisconsin Board of Health, he says: "As to registration, it is a matter of profound regret to the Board, who are doing so much *unpaid work* for the benefit of the State, that so many of our physicians are not willing to do so little labor as is involved in the mere effort of filling a blank."

It annoys me to find in our ranks in this State so many who seem utterly obtuse as to any value that can be attached to such records. The immense assistance which a faithful and full record of mortuary facts would afford our Board in its endeavors to promote the sanitary welfare of the State, do not seem to be at all appreciated only by a very few.

These returns would place us at once in a position to investigate, and in many instances to remove conditions inimical to life and health. I am now preparing a paper to go into our next report on scarlatina, a disease which has for many months and is still reaping a large harvest of death from the young in many places in the State. And, in addition to all the anxiety and time involved in such a report, I would give from my own resources $50 for a faithful record of facts concerning that disease covering the past twelve months in this State.

It would give great local force to anything I might write, and serve to arouse the people to more vigilance in warding off this great and destructive agent, whose harvest-field is the nursery.

In all periods in the history of all countries it has been rendered necessary that records of a statistical nature be made. The ancient Greeks and Romans even made inquiries to a considerable extent.

The importance of correct information regarding age, sex, condition and occupation of a people, their moral and social state, their education and their industry, is now universally recognized among the enlightened of all civilized nations. Where this information can be obtained, running far back into the past, it furnishes material for the most instructive comparisons, and for deducing the soundest rules in the administration of government and for promotion of general welfare among the people.

Statistics are far from being the barren array of figures, laboriously and ingeniously combined into tables and columns, which most people are apt to suppose them. They are rather the ledger of the nations, in which the citizen can read, as the merchant can his books, at a single glance, the results of a year or a period of years compared with others, and deduce therefrom the profit or loss in health, life, morals, wealth or power.

Statistics show, in New York, that out of over 130,000 children in that city under five years of age, 15,000 die every year.

TEMPERATURE AND HUMIDITY OF THE AIR AT DIFFERENT HEIGHTS.

A memoir on the temperature and humidity of the air at different hours, by Dr. H. E. Hamberg, based on observations made by him during the summer of 1875, at heights varying from two inches to twenty-two feet above the ground, was published recently in the *Transactions* of the Royal Society of Sciences at Upsal. The memoir is a valuable one, and is of interest to more than the mere meteorologist, it being evident that the inquiry is so handled as to bring it into close connection with such difficult questions as connection currents in the free atmosphere and the diffusion of vapor through the air.

In clear weather the temperature of the air nearest the surface was lower than that above it from two to three hours before sunset to at least two to three hours after sunrise. At all the six heights the temperature fell to the minimum at the same hour—viz., about 3 A. M.; but while it continued from this time to rise steadily at all the heights, the lowest temperature continued to be observed in the strata nearest the ground till several hours after sunrise. From this remarkable result, Dr. Hamberg concludes that the increase of temperature in the lower strata of the air in the early part of the forenoon is not an immediate and direct consequence of the heating of the ground, but is rather to be attributed to absorption by the air, or, more strictly, by its aqueous vapor, of the heat received from the sun's rays or reflected from the ground.

Over uneven ground covered with vegetation, the temperature is generally higher over those parts of the field which rise above the general level. Thus even slight elevations of only one or two feet have the air immediately resting on them often two degrees higher or more, whilst, on the other hand, a trench or depression one or two feet below the general level has the air resting on it two degrees or more lower than the air over the level portion of the field, a result of considerable practical importance in agriculture and horticulture.

The latent heat set free on the formation of dew appears from the observations clearly to retard the lowering of the temperature, but not to the extent which might have been expected. When, on the deposition of dew, the temperature of the air near the surface has fallen below 32 degrees, as soon as the dew is congealed into hoarfrost, the temperature of the lower stratum of the air in contact with the ground instantly rises to 32 degrees; but at the same time the temperature of the air higher up steadily remains lower than 32 degrees.

The absolute humidity of the air on clear nights, on which no dew is deposited, decreases from the ground upwards, just as happens

during the day; but, on the other hand, with dew the humidity is least nearest the ground, and increases with the height, and this influence of dew, in diminishing the humidity, extends upward to at least twenty-two feet, the height to which the observations were carried. Since his observations clearly show that the absolute humidity begins in the evening to diminish near the ground, before any dew is observed to be deposited, and also diminishes at all heights on those nights during which no dew whatever is formed, Dr. Hamberg is of opinion that the diminution of the humidity of the air during night is to be sought for in other physical causes than the deposition of dew.

Several of the points discussed will doubtless be made subjects of further investigation by others. In all cases it is most desirable, indeed, absolutely necessary, that the authors give wood-cuts and descriptions of the exact position and mode of protection adopted in the case of each thermometer employed in the observations. For such refined inquiries, the method of observation must necessarily be a refined one; in other words, such as will certainly secure the necessary comparability among all the instruments.—*Nature.*

———o———

Made dishes are a terror to the uninitiated, and also to those who do not comprehend the outlandish terms in which the "bill of fare," now called the *menu*, is commonly printed. A partial way out of part of the difficulty is to remember the articles, so that one who rejects the "French cook's" jargon can call for the dishes he likes. But this is only a partial release. Many a man desires a plain dish, and is ashamed to ask for it. During a recent passage on an ocean steamer, there was found a man of moral courage who dared to order—corned beef and cabbage! His independence was recognized by a large following, his homely choice became the fashion, and, as printers say, there was a "run" on the type of gastronomical independence. Two-thirds of the male passengers daily followed his example, and the "menu card" was as little heeded as last year's almanac.

Thackeray, the well-known and well-read novelist, had a passion for "beans and bacon," and other like homely preparations. It is related of him that he was one day found in the coffee room of the Athenæum Club, regaling himself alone in a corner, like little Jack Horner. It was not a Christmas pie he was taking, but tripe and onions! He said, in explanation, that he had an invitation to a dinner party, but seeing the tempting dish above referred to on the card, could not resist it. He sat down to tripe, and sent a regret to his intended host, in which he stated that he had "suddenly met an old friend, and was unable to leave him." This particular friend of Thackeray's is probably not the most digestible. But there are old friends in the line of diet to which, if people would adhere, they would not make the acquaintance of dyspepsia.

HYGIENE AT AMHERST COLLEGE.

Experience of the Department of Physical Education and Hygiene in Amherst College for the Past Sixteen Years.*

By Prof. E. Hitchcock, of Amherst College.

Probably the first idea of the department of physical education and hygiene in Amherst College originated in the mind of the late President Stearns. He realized the fact that the students of our colleges have bodies which need care and culture, as well as the intellectual and moral powers, and which need this care at the same time with the higher education. In the year 1856 we are able for the first time to find any expression of his views, when he says: "The breaking down of the health of the students, especially in the spring of the year, which is exceedingly common, involving the necessity of leaving college in many instances, and crippling the energies and destroying the prospects of not a few who remain, is, in my opinion, wholly unnecessary, if proper measures could be taken to prevent it." And in 1859, in his report to the trustees of the college, when he mentions the death of two members of the senior class as probably hastened, if not actually caused, by a neglect of the laws of health, the whole board of trustees were incited to the immediate erection of a building, the nucleus and beginning of the department. This building is called the Barrett Gymnasium, in honor of the late Benjamin Barrett, of Northampton, Mass., the largest donor to it.

This building is of stone, two-storied, well-lighted and ventilated, and warmed in the cold season. The lower story contains dressing-room, bowling alleys, spirometers, lifting and rowing machines, and the apparatus for securing vital statistics. The upper room (50x75 feet, of smooth hard pine floor, with a clear space of 40x50 feet), has upon its walls the dumb-bells and wands, and this motto from Prof. Owen, of the British Museum, in London: "Such are the dominating powers with which we, and we alone, are gifted. I say gifted, for the surpassing organization was no work of ours. It is He that hath made us, and not we ourselves. This frame is a temporary trust, for the uses of which we are responsible to the Maker. Oh, ye who possess it in the supple vigor of lusty youth, think well what it is that He has committed to your keeping. Waste not its energies! dull them not by sloth! spoil them not by pleasures! The supreme work of creation has been accomplished that you might possess a body—the sole erect—of all animal bodies the most free, and for what?—for the service of the soul. Strive to realize the conditions of the possession of this wondrous structure. Think what it may become—the temple of the Holy Spirit! Defile it not. Seek rather to adorn it with all

*Abstract of a paper read before the American Public Health Association, in Chicago, September 26, 1877.

meek and becoming gifts, with that fair furniture, moral and intellectual, which it is your inestimable privilege to acquire through the teachings, and examples, and ministrations of this seat of sound learning and religious education."

At one end of this hall are to be found much of the heavy apparatus, consisting of the horizontal bar, rack bars, vaulting horse, batule board, spool ropes, peg pole, incline board, perpendicular pole, horizontal, vertical and inclined ladders, swinging and traveling rings, Indian clubs, lifting weights and a few other kinds. At the other end is a small platform for the leader of the class exercises, and a piano to secure harmony and rhythm during the exercises. Above this platform is a gallery for the spectators to the exercises, of whom there were 3,635 during the year 1876–7, 842 of them being ladies. The gymnasium is open during all the hours of daylight, and may be used by any member of college at his will, save that he may not interfere with the exercise of a class when occupying the floor. No restraints whatever are put upon the students in using the building or its apparatus, save instructions as to the proper and healthy use of the heavy apparatus, and impressive caution to the freshmen and new comers, not to use excessively till inured to work and familiarity with the apparatus by a period of training.

In the year 1859 the department of physical education and hygiene was created in Amherst College. The title of this department was proposed by Dr. Nathan Allen, of Lowell—one of the trustees of the college, one of her graduates, of which he has been an early and long-tried friend, and the most devoted and faithful guardian to the department, of which he may well be styled the godfather. The duties of the professor of this department were established by the trustees, upon the suggestions of Dr. Allen, as follows: The duties of this professor shall be: "First, to take charge of the gymnasium and give instruction to the students in gymnastics. Second, to take a general oversight of the health of the students, and to give such instruction on the subject as may be deemed expedient, according to the general plan stated by the President in his report, and under the direction of the faculty, like all the other studies. Third, to teach elocution so far as it is connected with physical training. Fourth, he shall give lectures from time to time upon hygiene, physical culture, and other topics pertaining to the laws of life and health, including some general knowledge of anatomy and physiology. Fifth, the individual appointed to have charge of this department shall be a thoroughly educated physician, and, like other teachers and professors, shall be a member of the college faculty. It is distinctly understood that *the health of the students* shall at all times be an object of his special watch, care and counsel."

At the same time, the faculty believed that the exercises in the gymnasium should be conducted according to the following ideas: "First, the main object shall not be to secure feats of agility and strength, or even powerful muscle, but to keep in good health the whole body. Second, that all the students shall be required to attend on its exercises for half an hour, designated for the purpose, at least four days in the week. Third, the instructor shall assign to each individual such exercises as may be best adapted to him, taking

special care to prevent the ambitious from violent action and all extremes, endeavoring to work the whole body, and not overwork any part of it. Fourth, that while it may not be expedient to mark the gradation of attainment, as in the intellectual branches, yet regularity, attention and docility should be carefully noted, so as to have their proper weight in the deportment column of the student's general position. Fifth, that some time shall be allowed out of study hours for those volunteer exercises which different men, according to their tastes, may elect for recreation; and particularly that the bowling alleys be not given up to promiscuous use, but be allotted at regular hours to those who wish to make use of them—all these volunteer exercises, of whatever kind, to be under the supervison of the gymnasium instructor. Sixth, that the building shall always be closed before dark, that no light shall be used in it, and no smoking or irregularities of any kind shall be allowed in it. Seventh, that the instructor ought to be a member of the faculty, and give in to it his marks and occasional accounts, and receive directions as other officers of the college are accustomed to do."

This department has now been in operation seventeen years.

Each of the four classes in college meets the professor for an exercise in the gymnasium of half an hour's length, on four days in the week. The hours for the exercise are mainly at the beginning and close of the day, as both the most valuable time for exercise, and those which best adapt themselves to the college routine. Each class has its own captain, and as many other officers as are best adapted to manœuvre and handle the class in its movements. The general method of the conduct of the exercises is military, though considerably modified, to be adapted to the peculiar condition of things. The required exercise of each man and class is best known as that of light gymnastics, or those bodily exercises performed by a class with one or two pieces of apparatus in the hands, each movement timed to music, and all simultaneous and uniform. And the only apparatus successfully used at Amherst is the pair of wooden dumb-bells, weighing less than a pound apiece. The students here have universally preferred the bells to the rings and wands, though they have been thoroughly tried. Each class has its own "exercise" or series of bodily movements with the bells, and these are so managed as to give free, lively, graceful and vigorous work to the whole muscular system during the time of the exercise. In addition to the bell exercise, marching by the file and flank is considerably practiced, and during the cold months running, or "double-quick" movements. This running is encouraged, that the student may gain the very valuable assistance that it gives to the "wind" by furnishing warm air to the lungs, and a more rapid relief by sweating, and greater freedom to the body by the lesser amount of clothing required, than if the necessary amount were taken in the cold temperature of out-of-doors. This exercise varies from 15 to 20 minutes, and with the temperature from 55° to 60° the student almost always finishes with a moist skin. The remainder of the half-hour is occupied in voluntary exercise. Some use the heavy apparatus—about one in eight—or take a longer run; others dance, use clubs, sing, pull rope, toss in the blanket, turn somersaults, and occupy themselves in any proper manner to secure exercise, sport or recreation.

This amount of exercise includes all that is required of the student, and satisfies, probably, three-fourths of the whole number. The use of the bowling alleys is entirely at the option of the student. Some, however, who are not quite normally robust, or who are specially advised to it, frequent the gymnasium for the second half hour in the day, either following special directions, or enjoying themselves as they like. Others, on account of their robust nature, require more muscular work in order to discharge their superfluous energy, just as some people require more food than do others.

The definition or perhaps description of hygiene, as understood in this department, is best given in the words of the late Dr. E. A. Parkes: "Taking the word hygiene in its largest sense, it signifies rules for perfect culture of mind and body. It is impossible to dissociate the two. The body is affected by every mental and moral action; the mind is profoundly influenced by bodily conditions. For a perfect system of hygiene we must combine the knowledge of the physician, the schoolmaster and the priest, and must train the body, the intellect and the moral soul in a perfect and balanced order. Then if our knowledge were exact and our means of application adequate, we should see the human being in his perfect beauty, as Providence perhaps intended him to be; in the harmonious proportions and complete balance of all his parts in which he came out of his Maker's hands, in whose divine image we are told he was in the beginning made."

With this definition for an inspiration, it is one of the duties of the professor in this department to give a course of lectures on health to the Freshman class immediately upon its entering. The subject bears more especially upon the health of student life; and not merely to individual sanitary rules, but to the peculiar necessities of care in so closely compact a body of young and growing men in college; and not those conditions peculiar to the body alone, but to those interesting relations and inter-dependence of body upon mind, and *vice versa*. This department also gives instruction in human anatomy and physiology. The cabinets are well supplied with natural and artificial preparations of the human body, which furnish to the student a proper acquaintance with the structure and uses of the organs of the body—such a knowledge as ought to be familiar to every person of so-called liberal culture. The anatomy and physiology, which is technical or professional, is not offered to the student, but only such knowledge as may be gained by a tolerable acquaintance with the skeleton, the manikin, and most of the enlarged papier maché models of Auzoux.

The professor in this department is expected to know the physical condition of each student during term time. This does not mean that he only sees them at the gymnasium exercise, but that he makes himself acquainted with their habits, bodily condition, and whatever, in the physical sense, may react upon their mental state. This means that he offers suggestions where he may discover deficiency, excess, imprudence or ignorance of many of the conditions of student hygiene and life. For while the diseases of college life are seldom alarming or numerous, yet for students living in dormitories and boarding-houses, without home comforts and nursing when ill, much care is

often necessary to give comfort during and freedom from the disorders which affect young men at the college period of life.

The amount of time lost in sickness by the students is a fact determined by this department. Dr. Jarvis says that the amount of time lost by each laborer in Europe is from 19 to 20 days each year; and the Massachusetts Board of Health state that in 1872, in this commonwealth, each productive person lost 13 days by sickness. A man here is put on the sick-list if he is absent more than two consecutive days from all college exercises. With this as a comparison, between the years of 1861-2 and 1876-7 inclusive, 23.30 per cent. of the college have been entered on the sick list, or, every student in college has constructively lost 2.64 days each year by illness; and every sick student has averaged 11.36 days of absence from college duties. During this same period, 48, or three each year on an average, have left college from physical disabilities, although 16 of these have returned and entered again their own or a succeeding class. The causes which produced these removals were in 7 cases constitutional debility; in 6, typhoid fever; in 5, consumptive tendencies; in 6, weak or injured eyes, and single cases because of other infirmities. During this period of 16 years, 16 students have died while connected with college—10 from typhoid fever or its results, 3 by violent deaths (all of them during vacation), 2 by consumption and 1 by brain fever.

The fact of the serious influence of typhoid fever upon Amherst College students seems to demand an explanation, or rather some information, such as, perhaps, may be best derived from the report of the Massachusetts registration of births, sickness and deaths. Taking the classification of Dr. Farr, in which all diseases are grouped under 5 classes, we find that 28 per cent. of all the deaths in Massachusetts are from the zymotic class, in which typhoid fever is placed. There are 111 different causes of death as recorded by this same report for the commonwealth, and typhoid fever stands fourth in order as a cause, only consumption, pneumonia and old age outranking it in the number of its victims. Again, the deaths of males from typhoid fever were 742, while those of females were but 663. Still further, 42 per cent. of the deaths from this same cause was between the ages of 15 and 30 years (Amherst students average 21 years and two months.) And yet again, 44 per cent. of these deaths was during the months of September, October and November, the best part of the college term time. So that with these data of the commonwealth as a basis of comparison for the working of this fever, and combined with the fact that students are not at home, and are at the "daring and inconsiderate" age, it seems a wonder that there has not been rather more, than less, of this malady among the students of Amherst College.

In connection with this subject, it is instructive to learn that dyspepsia, though formerly prevalent in college, has lost its foothold here of late years. For the past 16 years it has not once so occurred as to be recognized as a cause of loss of time to any student. Pork, too, is mostly banished as an article of food. The maladies which have visited Amherst students for the 16 years past have been, in the order of their frequency: Colds, including the few of lung fever and influenza, 35 per cent.; physical accidents, 9.47 per cent.; boils, 4.82

per cent.; eyes, 4.56 per cent., and so on in decreasing ratio of numbers, with febricula, typhoid fever, quinsy, debility, mumps, bilious fever, diphtheria, bilious trouble, stomach irritation, intermittent fever, measles, teeth, and 45 other causes, with 164 cases yielding 12 per cent. of all the cases of sickness.

In addition to the items secured upon the maladies of students, Dr. Hasket Derby, of Boston, is now instituting a series of personal examinations of every student, in order to determine the effect of college life upon near-sightedness. In due time, without doubt, his results will be given to the public.

Probably the most important feature of this department consists in placing it on the same level with the other departments of the college course. . . .

By the generosity of Mr. John H. Washburn, Secretary of the Home Insurance Company, New York, a yearly prize of $100 is given to "the class which during the year shall most faithfully discharge its duties in the gymnasium, and carry out most fully the instructions of the Professor of Hygiene." This prize has been awarded for the last four years, and has shown valuable results in "bracing up" the easy, indifferent, want-of-energy element of society, which is not wanting in a college; the very character needing push, snap and tone to make it enjoyable of itself and of use to mankind. The following data, gathered at different periods, show the effect of the class prize: In 1868–9 the attendance on gymnastic exercises, including the excused absences, was 88 per cent. of the class. During October, 1870, the ratio of absence to attendance, with the same data, was 1:17.5. And during the summer of 1876–7 the average attendance of the classes, under same conditions, was 93.5 per cent.

A result bearing upon human viability has been secured by the statistics of this department. It is regarded as the established law, that the chances of life grow less and less from about the fifteenth to the twenty-third year of human existence, and the rate of decrease is very rapid. But the tables of health, as kept at Amherst College, show there is an improvement in health from year to year, through the course, thus seeming to show an exception to the law, the ages being from 19 to 23. For, taking the number of sick men in the Freshman class as unity, 1,000, we find that the Sophomores give but 0.912, the Juniors 0.759, and the Seniors 0.578, thus showing that sickness is reduced during the college course of a man nearly one-half. Or by another way, the proportion of sick men in the Freshman class is—by the hundred—one in 25.7, in the Sophomore one in 24.2, in the Junior one in 23.7, and in the Senior one in 19.2. . . .

Amherst College was brought into existence more than fifty years ago, by men and women who realized that there was need of a higher Christian culture in our country and the world. It has ever been in the hands of those who were imbued with this spirit, and the inaugural address of its newly-elected President leads no one to fear that Ichabod is written upon it. And while those who placed its foundation granite were inspired chiefly by the sense of the need of the spiritual and divine element in man's nature, is it not fair to believe that they thus better prepared the way for a true education of soul, mind and body? As the sound religious idea has ever permeated the

institution, the way has thus been better prepared for the philosophical, intellectual and scientific culture which we are proud to believe has been augmented and superadded during the valuable lives of many of its honored Presidents and Professors.

And now may we not rejoice that here the physical man is so well considered in his education? Is it not an evidence of more complete culture, that the college attempts to educate all the powers of man in his full development? Let the college rejoice, if, in its work for the ages, it shall properly regard the whole nature of man in her training, and do her best in the harmonious development of his powers as God ordained it should be.

———o———

Effects of Breathing Foul Air.—The air we breathe, which a great English physician calls gaseous food, may become impure to the degree of being *indigestible* to our lungs, and utterly unfit for the performance of functions which are quite as important as those of our solid and fluid victuals. Dull headaches, nausea, loss of appetite and of the sense of smell, and the sadness produced by the unsatisfied hunger after oxygen, are only incidental and secondary evils; the great principal curse of the troglodyte habit is its influence on the respiratory organs. In 1853, when Hanover and other parts of Northern Germany were visited by a very malignant kind of small-pox, the great anatomist, Langenbeck, tried to discover "the peculiarity of organic structure which disposes one man to catch the disease, while his neighbor escapes. . . . . I have cut up more human bodies than the Old Man of the Mountains, with all his accomplices," he writes from Göttingen in his semi-annual report, "and, speaking only of my primary object, I must confess that I am no wiser than before. But, though the mystery of small-pox has eluded my search, my labors have not been in vain; they have revealed to me something else—the origin of consumption. I am sure now of what I suspected long ago—viz., that pulmonary diseases have very little to do with intemperance or with erotic excesses, and much less with cold weather, but are nearly exclusively (if we except tuberculous tendencies inherited from *both* parents, I say *quite* exclusively) produced by the breathing of foul air. The lungs of all persons, minors included, who had worked for some years in close workshops and dusty factories, showed the germs of the fatal disease; while confirmed inebriates, who had passed their days in open air, had preserved their respiratory organs intact, whatever inroads their excesses had made on the rest of their system. If I should go into practice, and undertake the cure of a consumptive, I should begin by driving him out into the *Deister* (a densely-wooded mountain range of Hanover), and prevent him from entering a house for a year or two."—*From "Modern Troglodytes," in Popular Science Monthly for November.*

Editor's Table.

The Sanitarian.—Conclusion of Volume V. Prospectus Redivivus.

With pleasure we turn back to the prospectus which went out with the first number of THE SANITARIAN, and publish it again, as a voucher of our good intentions for the future. It was with no careless hand we wrote five years ago that:

The purpose of this publication is to so present the results of the various inquiries which have been, and which may hereafter be made for the preservation of health and the expectations of human life, as to make them most advantageous to the public and to the medical profession.

The resources of sanitary science are inexhaustible. It will be a chief object of THE SANITARIAN to awaken public attention to the extent of the field, and to the facts indicating how beneficently it may be cultivated. This will be done by showing the amount of ill health and mortality from preventable causes of disease; by pointing out the nature of those causes, and the way in which they operate; by showing that such causes are removable; and by exhibiting improved health, longevity and happiness as the fruits of their removal.

The laws of physiology and general pathology will be kept in view, as the basis of health; and by which hygiene constitutes a department of science which the medical profession can advantageously share with the public, or apply to individuals according to circumstances. The detail of these relations will involve questions of manifold significance, and many of them of the utmost importance to human health.

The practical questions of State Medicine; the health of armies and navies, marine hygiene, quarantine, civic cleanliness, water-supply, drainage and sewerage. Sanitary architecture: light, space, warming and ventilation. Climate and domicile: epidemic, endemic and hereditary diseases. Occupation, exercise and habits, food and beverages, in all varieties of quality and quantity. In short, whatever thing, condition or circumstance is in rapport with, or antagonistic to, the most perfect culture of mind and body, will be considered legitimate matter for THE SANITARIAN to discuss, advocate, condemn or reject at the *bar of health*. Advertisements will fall under the same category; none will be admitted of even questionable character in this regard.

In fulfillment of its mission, THE SANITARIAN asks kindly considera-

tion and assistance from all who would aid in the protection of the most precious of gifts divine—*human life.*

How well this declaration of purposes and objects has been fulfilled, those know best who have most carefully read THE SANITARIAN. We can, at least, say we have tried to be faithful.

The time has not been propitious for new enterprises, and for none less than journalism; we have had, therefore, abundant opportunity for missionary work. And here, we may be permitted to add, that in undertaking it, we had a higher object in view than mere subscriptions; these, of course, we anticipated in due time, if our work should prove itself worthy of them; if not, not. The field of sanitary science had been to us an enticing one for many years. We had had, at least we thought we had had, on both shores of the Atlantic, through climates both north and south the equator, some unusual opportunities for studying the vicissitudes of health, and the sources and course of fatal epidemics. And during the while, we had taken some pains to make ourselves familiar with the advances of sanitary science under the most enlightened culture. Our ambition was to turn these opportunities to account. And it is now, after five years' effort, with a satisfaction which we find it difficult to express, that, with the aid of a generous public press and many kind friends, we are beginning to realize the fruitfulness of the field.

A retrospective glance over the pages of back volumes, assures us by letters which we have been privileged to publish, that THE SANITARIAN has had from the first the rare confidence of such men as STEPHEN SMITH, S. O. VANDERPOEL, EDWIN M. SNOW, WILLARD PARKER, SAMUEL G. ARMOR, I. A. NICHOLS, WM. H. VAN BUREN, WILLIAM A. HAMMOND, JNO. ORDRONAUX, JAMES M. MINOR, AUSTIN FLINT, AUSTIN FLINT, JR., GURDON BUCK, T. GAILARD THOMAS, ALONZO CLARK, N. S. DAVIS, JAS. F. HIBBERD, HENRY W. BELLOWS, E. N. CHAPMAN, WM. IVES BUDDINGTON, EGBERT L. VIELE, A. L. LOOMIS, J. M. TONER, ELISHA HARRIS and J. L. CABELL—many of whom have contributed important papers. And, on the same plane, as contributors: C. R. AGNEW, MOREAU MORRIS, JNO. C. PETERS, NATHAN ALLEN, JOHN MORRIS, LEWIS W. LEEDS, SAMUEL LEAVITT, R. C. KEDZIE, JEROME WALKER, JOSEPH WILSON, FRANK H. HAMILTON, H. ENDEMAN, JARVIS S. WIGHT, J. R. BLACK, J. LEWIS SMITH, A. H. DANA, GEORGE T. ANGELL, EZRA M. HUNT, CORNELIUS B. FOX, JOHN DOUGALL, H. L. BARTLETT, SAMUEL G. BUSEY, JAMES C. BAYLES, E. W. GRAY, THOS. H. BAILEY, ALFRED L. CARROLL, T. P. CORBALLY, W. C. VAN BIBBER, BENJAMIN LEE, RICHARD MCSHERRY, D. F. LINCOLN, WM. H. BREWER, I. M. MACLAGAN, H. G. EASTMAN, C. T. LEWIS, E. H. JANES, A. B. STUART, W. C. WEY, J. Q. ADAMS, W. R. BARTLETT, H. P. FOWLER, E. H. BRADFORD, and many others. And in addition to these might be added the distinguished authors of many papers before the Medico-Legal Society, the American Public Health Association, and the New York Public Health Association, whose chief papers have been published in THE SANITARIAN; and besides these contributions, republications and translations from foreign sources, comprehending information not elsewhere obtainable on such subjects as:

The importance of Sanitary Science; Sanitary Improvement of Towns; School Poisoning; Defective Drainage; Sanitary Influence of

Light; Care and Nursing of Children; Parks and Camping-grounds for Children; Sanitary Architecture; Adulteration of Food; Ocean Travel; Air and Light; Disposal of Refuse; Stamping out Disease; Danger of Damp Cellars; Morbid Effects of Alcohol; Sea-bathing; Disinfection; Warming; Sleeping-rooms; Fruit; Profession of Nursing; Sanitary Superintendence of Schools; Hospitals; Ventilation; Nature's Scavengers; Water-supply; Yellow Fever; Quarantine; House-drainage; Prevention of Sickness; Sewage Question; Longevity; Sanitary Administration in Cities; College Life; Earth-closets; Rights of the Insane; Traps and Trapping; Hygiene of Dwellings; Disposal of the Dead; Danger of Obstructed Drains; Winter Resorts; Summer Resorts; Waste of Life; Air for Babies; Dangerous Wall Papers; Care of Lunatics; Slaughter-houses; Mental Culture; "Boiled Hammers"; Morbid Impulse; Typhoid Fever Avoidable; Cruelty; Vaccination and Re-vaccination; Hydrophobia; School Diseases; Life Insurance in its Sanitary Aspects; Position of Woman with Reference to Education; Relations of Mortality to Seasons of the Year; Ventilation of Ships; Criminal Responsibility; Fetid Feet; Effects of Worry; Physical Culture; Furnaces; Adulterated Houses; Poisonous Bitters; Water Contamination; Carbolic Acid; Health and Culture; Carbonic Acid and its Dangers; Health of the People; Building-ground; Relations of Geology to Building-ground; Sanitary Deficiencies; Burns and Scalds; Perils of the School-room; Hand-feeding of Infants; Relations of Topography to Health; Sanitary Poetry; Abattoirs; Car Ventilation; Florida for Invalids; the Bermudas as a Health Resort; Diphtheria—its dangers and prevention; Enigmas of Life; Law of Fatigue; State Boards of Health; Cure for Discontent; Brain Culture in Relation to the School-room; Sewing Machines; Food Analyses; Vegetables and Fruits; Children's Clothing; Plants as Doctors; Education and Heredity; Danger of Lead Pipes in Water-supply; Impure Milk; Seasonable Food; Climates of California; Hemlock-poisoning; Waste and Soil Pipes; Lead in Potable Waters; Typhoidal Resorts; Homes of the Laboring Classes; Importance of Sanitary Provision in Public Institutions; Rules for the Care of the Eyes in School-life; Street Dirt and its Dangers; Canned Salmon—its Dangers; College Sports; Value of Health to a City; Tobacco Poisoning; Excessive Death Rates among Children; Topography and Drainage of New Orleans; Children's Eyes; Relations of Health to Longevity; Infant Diet; Relations of Inebriety to Public Health; Preventable Sickness; School-room Stunting; Sanitary Resorts; Pollution of Rivers; Cost of an Epidemic; Perils of Massing Population in Cities; Health of New York; Pulmonary Consumption in Cities; Eucalyptus Globulus; Crime; Sewer Gas Poison; Salting the Streets for the Removal of Snow; Effects of Temperature on Health; Ventilation of Churches; Average Safety of Railroad Travel; Uses and Abuses of Life Insurance; Milk in its Medico-Legal Aspects; Fashion and its Penalties; Mysterious Disappearances in Insurance Cases; Soap—its Qualities and Uses; Hospital Construction; Relations of Good Digestion to Appetite; Spontaneous Development of Typhoid Fever; Organic Impurities of Drinking-water; Valley of the Hot Springs, Va.; American Watering-places; Causes of Insanity; White Cliff, Tenn.; Deformities and their Relation to Hygiene; Sanitary

Appliances at the Centennial; Sanitary Requirements in School Architecture; Gases of Decay; School-house Lighting; Sanitary Enineering at the Centennial; Railway Injuries of the Spine in their Medico-Legal Relations; Trichina; Conditions of Excellence in Plumbing Work; Warning of Contagious Disease as Important as Fire Alarm; Relation of Medical Editors to the Medical Profession; Trials and Triumphs of a Sanitarian; Relation of Unsanitary Conditions to Pauperism, Vice and Crime; Brooklyn Seaside Home; Shade Trees in Cities; Medico-Legal Science; State Medicine in Massachusetts; Sanitary Requirements in School Architecture; Public Health Reform; Civic Cleanliness; Directions for Preventing the Spread of Infectious Diseases; Personal Identity; Calisthenics; Water-supply of New York; Edwin Chadwick, with Portrait; Safety of Ships and Those Who Travel in Them; Sanitary Reform in Ship Life; Conservative Medicine and the Mission of the Sanitarian; Marine Hygiene on Board Passenger Vessels; Milk-beer; Compulsory Education; Nervousness and Nervines; What Changes Does Physiology Demand in our School-rooms? Influence of Civilization on the Duration of Life; Sanitation in India; Garden City—a City of Health; William Farr, with Portrait; Vital Statistics; The Plea of Insanity; Sanitary Knowledge for School Children; Stewart Memorial Church; New York Public Charities and Correction; Street Pavements; Tuberculosis in Milch Cows, and the Dangers of Milk from Diseased Cows; Santa Barbara as a Health Resort; Criminality; Max Joseph Pettenkofer, with Portrait; Educational Notes; Relation of Topographical Surveys to Public Health; Arrest of Zymotic Diseases; Causes of Disease in Country Homes; Brooklyn and Her Suburbs; Testamentary Capacity; School Luncheons; Typhoid Infection in Drinking-water; Malarial Diseases in Putnam County; "Sanitary Regulations"; Rudolf L. C. Virchow, with Portrait; Faulty Menu of Boarding-schools; American Public Health Association; Civil Malpractice and Surgical Jurisprudence; Health of Rowing Men; Disease and Damp Soils; Temperature and Humidity of the Air at Different Heights; Hygiene at Amherst College; Influence of the Movement of Subterranean Water; such are the titles of some of the leading papers to be found in the pages of THE SANITARIAN.

The seeds thus scattered have taken root, and in various ways show evidence of having fallen on good ground. Public taste is beginning to require of both scientific and general literature a recognition of sanitary science. While it is fast becoming the physician's highest aim, it is no longer his sole sphere; public health, family health and individual health are beginning to be popular themes of discussion in public assemblies, legislative bodies, university halls, public schools, the pulpit and the domestic circle.

The prevention of disease is a counterpart to self-preservation: it appeals to the most sacred obligations of the individual to himself and to his neighbor, and invites co-operation in a warfare in which all may engage without distinction of creed or sect. On this battle-field, at least, there are no "pathies."

The cause of prevention and preservation is a common cause against a common enemy—*preventable* sickness.

Whatever the distinctions of creed, sect, sex or color in other mat-

ters, the sphere of THE SANITARIAN is common ground over an extensive field, in which all who will may find room to labor.

Throughout all sections of the community, and all phases of society, there is a growing desire for knowledge on the means of preserving health. Intelligent people, everywhere, recognize its importance, and we promise them for the future an increase of energy as nearly as practicable commensurate with the progress of the cause we advocate, while we shall continue in the future, as in the past, to rely upon an intelligent appreciation of our efforts.

A. N. BELL, M.D.,
Editor and Publisher.

Cellars.—Cleanliness, dryness, light and ventilation are the cardinal conditions of healthful human habitations; but with these conditions *cellars*, as ordinarily constructed, are in deadly conflict. "Did the reader ever, when a child, see the cellar afloat at some old home in the country? You creep part way down the cellar stairs, with only the light of a single tallow candle, and behold by its dim glimmer an expanse of dark water, boundless as the sea. On its surface, in dire confusion, float barrels and boxes, butter-firkins and washtubs, boards, planks, hoops and staves without number, interspersed with apples, turnips and cabbages, while half-drowned rats and mice scramble up the stairway for dear life, and drive you affrighted back to the kitchen."* Lest this should appear to be an exaggeration, we venture to invite the survivors of such scenes in those same New England homes to revive their memories. This they can do, even if the old houses have rotted away, for there is a singularly dangerous propensity on the part of country people to occupy the old cellars as new building sites. But it is not our purpose to reflect upon the specially dangerous propensities of country people; they are quite as wise in this respect as their more "set-up" city cousins. Nearly twenty years ago we had occasion, in seeking out the cause of prevailing disease, to descend the cellar-stairs of a brick house in the middle of a block, only two blocks distant from our then residence in Brooklyn. On reaching the bottom step, we deemed it prudent to feel the mud, and pierced it with a cane to the depth of seventeen inches. Fifteen years subsequently, this same house (a central one of a block of five constructed alike) was discovered to be the centre of a malignant fever which created much alarm in the neighborhood.†

Less than two years ago we were called upon by a merchant to examine a new "first-class" house, on the fashionable high ground of New York (Fifty-fifth Street, near Madison Avenue), with a view to a purchase, if, in our judgment, it was deemed healthful. It was built on "solid rock," we were assured, and therefore "must have a good cellar." In the immediate neighborhood we noticed other foundations

*Hon. Henry F. French, of Concord, Massachusetts—Fourth Annual Report Massachusetts State Board of Health, p. 182.

†Report of the Board of Health of Brooklyn, 1874, p. 31.

in process of preparation. The "solid rock," which was being leveled down to the required depth for cellar floors, we observed to be traversed by fissures. The first noticeable feature in the cellar of the house under examination was a damp floor, although Portland-cemented. We were not long in discovering a mark on the wall, showing that water had stood in it to the depth of four or five inches, and on further search we found a recently-laid and carefully-covered tile-drain, provided to carry off the subsequent overflow from the same—but inexhaustible source of overflow and dampness—surface soakage of higher ground in the neighborhood. My friend did not buy the house. A better counterpart to the scene so well described by Judge French can be found almost any day after a heavy rain in the cellars of many mercantile houses in the lower part of New York; and the cellars of the "first-class" dwellings in which their families reside, on both sides the river, are frequently no better; for these, though not all, by any means, built on "solid rock," or afloat with soil leakage, are subject to the no less dangerous ground air and pestiferous sewer gases, equally due to criminal ignorance or negligence.

It is an accepted fact that *soil moisture*—even of clean water—is a prolific source of pulmonary consumption. Notwithstanding, it is the common practice to build houses, in both city and country, regardless of this fatal condition. Not only is culpable carelessness common in the selection of house sites in this respect, but good sites are frequently spoiled by the ignorance or blindness of those who use them. The site, instead of being thoroughly drained and fortified with a damp-proof covering, is usually built upon without any preparation whatever. It is not at all uncommon to rebuild over old cellars; and in some cases holes in the ground, valleys or "sunken lots" are chosen as eligible and economical sites. The cellar walls are built "solid," of porous bricks, which will ordinarily hold one-eighth of their weight in moisture. The descending ground in the rear is taken advantage of for a light basement kitchen, and often, also, dining-room, without any cellar, and floors only a few inches from the ground. And finally, when the house is finished, the basement course is banked up with damp earth to make the cellar "warm." Within a month we have visited such a house, a suburban one, now in process of erection, and hastening to completion for early occupancy. The result will be, as in all such houses, persistent dampness. Such cellars are virtual drain-holes for soil moisture for many yards round. Besides this, the water from the roof, and that which drives against the sides in rain storms, sinks down in close contact with the walls, and percolates unseen under the foundation, is taken up in vapor by the warmer atmosphere within, and pervades every part.

But suppose it be an *old* country cellar—one that has been used many years for the storage of vegetables, butter, cheese, beef and bacon, and with its dark corners of rubbish piled up in wasting decay, the soil moisture and ground air percolating under and through the walls, gaining strength the while, winds its way through all the crevices of the floor, fills all the carpets, rugs, beds and clothing, and is breathed day and night by all who dwell therein. The *consequences* are common knowledge, and for these we have the doctors.

Another builder selects, it may be, a good site, on an elevation, with a good surface drainage. He builds a "first-class house," with cellar walls of blue-stone or glazed brick, laid in cement, and, may be, has the bottom of the same material. He has an eye to imperviousness, and tries to secure it. In neither case is any attention paid to light, more than sufficient to make a gloomy store-room for winter vegetables and fuel. Ventilation has not been thought of in either case; it is considered of no consequence. Such a house, finished in April and occupied on the first day of the next succeeding month, is delightfully cool and pleasant for the summer months. But, following the fashion, its occupants close it the latter part of summer, and betake themselves to the country. They return in October to dampness and mould, with which they content themselves, however, in the prospect of dissipating the moisture when the fires are lighted. Icy December comes in, the fashionable radiators are heated to the utmost, but every morning the windows are reeking with a sweating sickness; the cold, impervious and non-absorbent cellar walls continually abstract the warmth of the air which they enclose, condense the moisture on their surface, and drip like as do the subjects of pernicious fever, which is scarcely more sapping to the human constitution.

A correspondent of the Massachusetts State Board of Health gives a sketch of the cellar of a house in Hadley, built by a clergyman. It was provided with an open well and sink drain, with its deposit-box in close proximity thereto, affording facility to discharge its gases in the well as the most convenient place. The cellar was used, as country cellars commonly are, for the storage of provisions of every kind, and the windows were never opened. The only escape for the soil moisture and ground air, except that which was absorbed by the drinking water, was through the crevices of the floor into the rooms above. "After a few months' residence in the house, the clergyman's wife died of fever. He soon married again, and the second wife also died of fever within a year from the time of marriage. His children were sick. He occupied the house about two years, and was succeeded by a man named B——. His wife was soon taken ill, and barely escaped with her life. A physician then took the house! He married, and his wife soon after died of fever. Another physician took the house, and within a few months came near dying of erysipelas. He deserved it. The house meanwhile received no treatment; the doctors, according to their usual wont, even in their own families, were satisfied to deal with the consequences, and leave the causes to do their worst. Next after the doctors, a school-teacher took the house, and made a few changes "for convenience," apparently, for substantially it remained the same, for he, too, escaped as by the skin of his teeth. Finally, after the foreclosure of many lives, "the sickness and fatality of the property became so marked that it became unsalable. When last sold, every sort of prediction was made as to the risk of occupancy; but, by a thorough attention to sanitary conditions, no such risks have been encountered. And this, too, could be matched by a number of city houses which have fallen under our observation. One we knew of on Brooklyn Heights, and not long ago, notorious for its unhealthfulness. *It was built over an old privy vault!* And only a few weeks ago a clergyman, Rev. Mr. Crowthers, and four children, were killed by the pent-up

poisonous air of a Brooklyn cellar. Many we know of in both New York and Brooklyn, built in ground filled in with street dirt, ashes and house garbage; palatial some of them are, in both dimensions and appointments; but the leprosy which cleaved unto Gehazi for his too great haste to get rich was not more pertinacious than that which is fastened to these dwelling-places, erected under the same propensities as those which governed him.

And the diseases which follow, though, perhaps less loathsome, are even more deadly. Observation shows that more than half the diseases and mortality which afflict families and communities in the United States are caused by soil moisture, ground air, and the gases of decay. Consumption alone, which kills over 70,000 people annually in the United States—and about one-seventh of all who die—is chiefly due to these causes; typhoid fever, which kills 25,000 annually, is wholly due to them; and diphtheria, which kills 10,000 annually, is no less certainly due to the same causes, than typhoid fever; diarrhœal, and other diseases increase the number of deaths throughout the country due to this same category of causes, to not less than 250,000 annually. That a large proportion of these deaths is due to *bad cellars* no one can question who will take the pains to examine into their condition.

But what is the remedy? It is stated in the opening sentence of this article: *Cleanliness, dryness, light,* and *ventilation.* If these conditions have not been kept in view from the time of the selection of a building site to the completion of the domicile, they should be instituted as far as practicable subsequently, and the sooner the better. Of sites, that is best which is cleanest, and which may be most effectually drained. Soils greatly differ in this respect. They are usually classed into: 1, those which are impervious, and resist absorption—rocks; 2, those which are pervious and retentive, absorb and give off water slowly—clays; and 3, those which are freely pervious, which absorb and give off water rapidly—sand, gravel, and chalk, and mixed soils of different degrees of porosity. Without drainage, all soils hold water in proportion to their interstitial spaces; and all soils thus filled with water instead of air, not only impart dampness to the walls with which they are in contact, but the ground air which they give off is highly injurious, inasmuch as it is more or less impregnated with the gases of decay. Even "impermeable" granite soils contain some water—about a pint to the cubic yard. Loose sand will contain from 40 to 50 gallons per cubic yard; common sand-stone 27 gallons; clays will hold from 30 to 50 per cent. of their own weight.

There is also a great difference in the capillary attraction of different soils, all being more or less susceptible to it. Sand, for example, will be completely dry on the surface within a foot or so of underlying water. Clay, on the other hand, gives off water much less freely but continuously for a long period of time, and, in the end, a much larger amount than sand, in which the water freely moves. Moreover, owing to the retentive quality of the clay, organic substances existing in them undergo decomposition, and add their mephitic gases to the soil moisture: these conditions render such soils in a high degree insalubrious. But the further consideration of soils will be taken up hereafter.

Of damp-proof courses several kinds are in use, for example: a

double course of slate, or one course of slate bedded in cement, is sométimes laid along the top of the walls when they have emerged above the ground line; layers of sheet lead have also been used for the purpose. Another plan is the paying over the tops of the walls with a coat of hot asphalt and tar, or bitumen mixed with sand. There is also a kind of so-called asphalt damp-proof course sold in sheets ready for laying on the walls, but this alone is inefficient. A course or two of enameled bricks, or glazed bricks, are also sometimes used. Vitrified stone-ware tile, made in thicknesses from one to one and a half inches, and perforated in order to ventilate the space between the ground and the joists of the floor, is an excellent but costly means, also useful in preventing dry rot in the timbers. But it is evident all these devices, excepting the asphalt and bitumen, are adapted only to the process of construction, inapplicable to amends in default of proper construction. Moreover, for this, lead, which appears to be the best article for the purpose, is evidently too costly for common use. The vitrified stone-ware tile, is also expensive, besides being, like slate, liable to break. Hydraulic cement and brick masonry, two articles in most common use, are but very partially efficient against moisture, and wholly inefficient against ground air, on account of their porosity.

Being concerned for our own cellar recently—situated on the best of sandy soil (Garden City)—well lighted and ventilated, we have taken some pains to inquire into the best means of repair against soil-moisture and ground air. We satisfied ourselves that, all things considered, a lining made of felt and asphaltic cement was the easiest of application, the most economical, and the most efficacious means we could use. The manner of application consists in laying alternate layers of felt saturated in bitumen and asphaltic cement laid on boiling hot, which has the effect of consolidating the several layers (four), into a thoroughly impervious and compact lining of about an inch in thickness, corresponding to all irregularities of the under surface, while it possesses sufficient adhesiveness and elasticity to prevent displacement or cracking. The surface is smooth, quickly becomes thoroughly dry and cleanly. It appears to be adaptable to all conditions of repair against soil moisture and ground air, and its thorough imperviousness, cleanliness, and antiseptic qualities are unquestionable. We believe it to be equally adaptable to construction, and superior to any means hitherto devised.

—o—

Pavements, in their relation to the public health, are deservedly attracting more and more attention. *Wooden* pavements, we hoped, had had their day. But from a recent article in *Engineering News* we learn that new wooden pavements are now being laid in Chicago, on foundations made of street fillings from which "*nothing* is excluded"—material dumped in the most careless way, without puddling, ramming or rolling—so carelessly that "every citizen in Chicago is knowing to the fact that hardly a pavement is laid that does not show settlement in places before the work has got one hundred yards in advance, and that solidity, instead of being the rule, is the exception. . . . The superstructure—the foundation—is,

from the bottom up, fraudulent." What such pavements will be in a year or two, we can easily imagine. The most that can be said of wooden pavements, even when well laid, is, that when new they are pleasant to ride upon; but they are short-lived, and incapable of repair.

A rotting wooden pavement is odious to the sight and injurious to health. New York and Brooklyn have not paved a single street with wood for several years past, and with it they will probably never pave another.

Stone Pavements are economical in the sense that they cost little for repairs; but they are costly from the fact that they wreck horses, harness and vehicles before they have lived out half their days. But they are objectionable because they are unclean; they stun with noise, are uncomfortable to ride upon, and are jarring and injurious to sensitive persons and nervous invalids. The sand which forms the packing between, and the bed beneath the stones, speedily becomes a saturated mass of filth, accumulating with every shower, and giving off its poisonous emanations with every successive dry heat, filling the air we breathe with its vapors. The best granite block pavements are as open to this objection as any other. If these are not made with wide crevices to hold sand, they are too slippery for horses; and, being made with open crevices, the edges of the granite blocks, under heavy travel, are continually spalling off—enlarging the crevices—and the pavement soon becomes as rough and destructive to horses and vehicles and as jarring as a cobble pavement; in proof of which, it is only necessary to ride in an omnibus on Broadway, though it is only a few years since it was repaved with the best granite blocks.

Asphaltic or Bituminous Pavements we have watched with great interest for several years—since their introduction into Brooklyn. We have been in no haste to endorse them until they should have demonstrated their good qualities. But we think they have attained that degree of perfection when it is safe to say they are the best pavements now in use—certainly the best for all streets of private residences—*if well made.* The one we know the most of is the Abbott Pavement. The Neufchatel, Grahamite and Filbert are also spoken of favorably. But the Abbott Pavement has been laid successfully, under our own observation, in Brooklyn and New York, where we have watched it with increasing interest. There are now in Brooklyn alone fourteen miles of streets paved with it, most of them leading thoroughfares, and several of them over seven years old; so that it may be said to be fairly tested, and no longer experimental. We have heard equally good accounts of it in Washington and some other cities. These pavements possess all the requirements for the surface prescribed by Prof. Haupt, which we recently published. They are firm and elastic; noiseless, clean and dry; smooth, yet rough; permanent, yet easily removable; non-combustible, durable, cheap, and readily obtainable. They also conserve the public health; no water and no filth can penetrate them, and at less expense than any other pavement they can be cleaned every night.

We do not hesitate to say to those dwellers in cities who know only stone pavements, or those of decaying wood, that if they once traveled upon an Asphalt Pavement, they would exclaim, "These are the ways of pleasantness and peace."

The Public Health.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of Deaths from all Causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping-Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœal Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,079,326—5 wks. end'g Oct. 27	1195	2527	24.34	112		125	74	11	52	55	40	3	25	386	382	233
Philadelphia, 850,900—4 wks. end'g Oct. 27	353	1044	15.95	43		42	16		31	4	4	10	12	35	103	54
Brooklyn, 528,000—4 wks. end'g Oct. 27...	351	789	19.42	23		64	41		38	7	8		6	67	121	55
St. Louis, 500,000—4 wks. end'g Oct. 27...	157	427	11.1	17		24			9	3	9	2	3	28	35	33
Chicago, 460,000—4 wks. end'g Oct. 27.....	280	540	15.26	26	3	39	22		32	4	23		3	43	53	31
Baltimore, 350,000—4 wks. end'g Oct. 27....	214	526	19.53	14		65	12	1	17	9	25	3	1	18	71	33
Boston, 363,000—4 wks. end'g Oct. 27.....	198	518	18.27	3		4			1	1	3			11	15	6
Cincinnati, 280,000—4 weeks end'g Oct. 27.	147	342	15.87	22	1	14	7		7	3	11		8	31	44	35
San Francisco, 300,000—month of Sept....	163	434	17.36	18		35		1	3	2	20		2	21	50	38
New Orleans, 210,000—4 wks. end'g Oct. 28	142	417	25.53	14	13	1		1	1	1	8		2	34	63	23
Washington, 160,000—month of Oct.....	131	332	24.90	8		29	8		7	4	12		4	13	70	20
Pittsburgh, 145,000—month of Oct.....		374	26.83	21	30	122	7		16	8	15			11	22	20
Newark, 126,000.....																
Providence, 103,000—month of Oct.....	73	173	20.1	2		48			3	1	5		1	11	16	17
Milwaukee, 123,000—month of Oct.....	79	158	15.41	9	10	9	19		4		5	1		14	21	11
Rochester, 70,000—month of Oct.....	28	95	10.62	6		4					5			8	16	4
Richmond, 75,000—4 wks. end'g Oct. 27...	46	119	20.62	2		2	2		1		5			6	20	2
New Haven, 60,000—month of Oct	43	100	20.	5		5	5		11	1	3			1	20	4
Charleston, 57,000—4 wks. end'g Oct. 27...	26	147	33.35													
Toledo, 50,000—month of Oct.....	31	68	16.32	2		9			2		7		8	2	8	
Mobile, 40,000—month of Sept.....	27	76	22.8	3							1			4	10	3
Dayton, 36,000—month of Oct.....	7	32	10.66	2		2					3			3	2	1
Nashville, 27,000—month of Oct	27	68	30.24	2		17				1			3	3	10	3
Wheeling, 28,000—month of Oct.....	18	42	18.	3		1	11				2			1	6	3
Buffalo, 170,000—month of Sept.....	111	200	14.11	13		2				4	6			62	22	10
Knoxville, 13,000—month of Oct.....	5	18	16.61						1						4	
Paterson, 40,000.....																
Petersburg, 20,000—month of Sept.....	20	40	24.	1		1					3		2	4		1
Selma, 8,000—month of Oct.....	2	11	16.5												2	
Elmira, 26,100—month of Oct.....	8	22	10.11			4			1					1	3	5
Yonkers, 18,000—month of Oct.....	9	20	13.33	3		1	1								4	3
Memphis, 45,000—month of Oct.....	29	105	28.	3		1	1	1		1	1		1	16	18	4
Detroit, 115,000.....																
Syracuse, 60,000																
Reading, 40,000—9 mos. end'g Sept. 30....	361	744	13.95													
Sacramento, 21,000																
Minneapolis, 44,000—month of Sept.....	31	49	13.36	2			1		2		4			11	6	4

—o—

Correspondents under this head are earnestly requested to send their reports promptly, and latest estimated population.

—o—

Toledo.—Dr. A. W. Fisher, the accomplished and energetic health officer, Toledo, at the meeting of the Board of Health in October, submitted a historical sketch of the work of the said Board, from the time of its first establishment, about a dozen years ago, to the present. His sketch closes with the following remarks, applicable to all American cities:

"Every inhabitant of this city is directly interested in its sanitary condition, in the sanitary condition not only of his own premises, but those adjacent to him. The foul and offensive effluvia from his neighbor's premises affect him equally with his neighbor. Filthy streets and alleys, sewer emanations, stagnant pools of water, imperfect drainage and improper food and water are the means that produce many of the diseases that we are afflicted with. The careful inspection of these nuisances, and their prompt abatement, prevent and arrest the spread of disease, and place the locality in a proper sanitary condition. These duties should be entrusted to, and performed by persons who have a knowledge of, and are trained in sanitary science.

"In the table of deaths from 1866 to 1876, you will observe that the greatest number of deaths were caused by diseases that are called preventible. This city is not an exception. You will find this to be the case in most of the cities in the United States. These deaths occur mostly in children under five years of age, and are caused by eruptive, diarrhœal and febrile diseases, &c., &c. Three thousand two hundred and ninety-three deaths (3,293) are reported as having occurred in children under five years of age from 1866 to 1876, inclusive: or about 54 per cent. of the total number of deaths reported from all causes.

"I have no hesitancy in stating that this frightful mortality of children, by the proper enforcement of sanitary laws and hygienic regulations, can be diminished; *that disease and death are, in a great measure, preventable.*

"How? By constant and repeated inspection of premises, alleys and streets

"By the prompt abatement of nuisances.

"By the isolation of persons suffering from contagious and infectious diseases.

By disinfectants timely and properly used.

"By arousing the public upon the vital importance of the principles of hygiene.

"By the supervision of connections to vaults, cesspools and sewers.

"By a thorough and complete registration of births, marriages and deaths, and the nature, character and locality of disease.

"By the adoption and enforcement of sanitary rules and regulations that will place us in such hygienic relations that we can avert sickness and suffering, and diminish the ratio of mortality."

Consolation from Statistics.—"And it is really true that I shall recover?" asked a patient of his doctor. "Infallibly," answered the man of medicine, taking from his pocket a paper full of figures. "Here, look at the statistics of your case; you will find that one per cent. of those attacked with your malady are cured." "Well?" said the sick man, in a dissatisfied manner. "Well, you are the hundredth person with this disease that I have had under my care, and the first ninety-nine are all dead."

Nashville, in the Annual Report of the Board of Health for 1877,* gives strong evidence of being, finally, fully alive to the necessity of earnest sanitary work. And this we take the more pleasure in noticing, by reason of having been taken to task about three years ago for our unpalatable criticism on the unsanitary condition which at that time obtained. The report before us comprehends:

I. Reports on Sanitary Reform in the

* Second Report of the Board of Health to the Honorable City Council of the city of Nashville, for the year ending July 4, 1877. Pp. 230. Statistical Tables and Map. Nashville, Tenn.: Tavel, Eastman & Howell.

Mortuary Statistics for 1875–6, by J. B. Lindsley, M.D., Health Officer. II. Topography, by W. F. Foster, City Engineer; Geology, by I. M. Safford, Ph.D., M.D.; Water-Supply, by N. T. Lupton, M.D., LL.D.; Climate, by A. C. Ford, M.D., and Brief Annals, by Anson Nelson, Secretary of the Tenn. Historical Society, with a copious Index to the whole, by Geo. S. Blackie, M.D., Ph.D.

"First settled April 24th, 1780." The Health Officer states: "It has, until within three years, had no effective sanitary code." Various efforts to establish one, however, are accounted of, but no substantial progress made until within this period. As may be inferred from the titles of the reports in this volume, there is an intelligent, painstaking foundation laid, as a point of departure for future work; short-comings are laid bare, and comparisons given, at the risk of being considered odious. Examples of sanitary work and results in other cities even more unfavorably situated than Nashville, are cited as a stimulus to the high aims of those now in authority. In short, an outspoken statement of the case, and a firm grasp, are the common characteristics of the joint report. The conclusion is evident that, naturally, Nashville possesses unusual advantages for salubrity; practically, thus far, an unusual prevalence of humanly-made epidemics.

"By the census of 1875, which is used in making our calculations when not otherwise specified, the total population of Nashville was 27,000; of which, white, 17,100; colored, 9,900. In 1875, total deaths, 933—white, 441; colored, 492. Death-rate, total, 34.55—white, 25.78; colored, 49.69. In 1876, total deaths, 899—white, 450; colored, 449. Death-rate, 33.25—white, 26.31; colored, 45.35." Of the total for 1876, 424 were under five years of age. The prevailing causes were: consumption, 113; diphtheria, 98; diarrhœal diseases, 72; pneumonia, 62; convulsions, 52; measles, 38; dropsies, 34; *teething*, 33; *old age*, 30 (total number of deaths over 70, 42; over 90, 6); fevers, 27; heart disease, 22; croup, 20; scrofula, 14; marasmus, 13. Of marriages and births, "there is no possibility of collecting accurate returns." The medical men of the State are urged to make strong efforts for the necessary legislation. Uncleanliness, particularly in regard to filthy fillings for low-lying lots; imperfect drainage, insufficient and inefficient sewerage, and foul water, are the glaring evils hitherto tolerated, and against which energetic action is urged. And if war is made upon these evils in the spirit of this report, Nashville will ere long regain the proud eminence she once enjoyed, of being "a summer health resort of multitudes from the more Southern States."

"Go South for the Winter," is good advice for all who are afflicted with, or predisposed to pulmonary disease, living north of Virginia, *if not too sick*. It is a great mistake for persons far advanced in pulmonary disease to expect benefit from a change of climate; above all, if the change contemplates continued confinement to house. Those only should change who are well enough for outdoor exercise—away from the company and restraints of the afflicted. The Bermudas, Nassau, Havana, San Domingo, and the nearer places of Florida, and all points South and Southwest, are accessible by the most comfortable and expeditious routes, advertised on other pages of this number. But bear in mind, as much or more depends upon the domicile than the place. No matter how good the climate, if the house is damp, if the cellar is not clean, if there is a musty or personal odor about the premises—if, in short, the house is not clean, dry, light, well warmed and well ventilated—keep outside of it.

Conclusive. — Lodger: "I detect rather a disagreeable smell in the house, Mrs. Jones. Are you sure the drains—" Welsh Landlady: "Oh, it can't be the drains, sir, whatever. There are none, sir!"—*Punch*.

Hecker's, and **Jewell Bros.**, are rivals at the American Institute Fair, in the exhibition they make of a most wholesome business, excelling all competitors in the superiority and healthfulness of their **Self-Raising Flour, Farina**, and **"Baby's Cereal Food."** No particular commendation is necessary for either of these houses, other than to state that they are always not only up to time in the adoption of all improvements, but leaders in the superior excellence of the articles which they manufacture.

The special merit of Jewells' "Baby's Cereal Food," is that most of the starch and all the woody fibre, common to wheaten flour, and indigestible by infants, are excluded, and the food thoroughly cooked. The best selected wheat only is used in its preparation. It has earned a deserved reputation among physicians as the *best food made* for weaning babies, or those who, from any cause, are deprived of mother's milk.

Ham Curing.—Messrs. F. A. Ferris & Company, of this city, have long devoted their energies to improvements in the curing of hams and breakfast bacon. Such has been their success, that their reputation fully justifies the extensive advertising of their unrivaled trademark brand. By special permission, they refer strangers to their goods to Messrs. Park & Tilford, and to Messrs. Acker, Merrall & Condit, who are regularly supplied with these fine curings. Such an endorsement is ample, and their rapidly increasing business is the proper reward for their skill, energy and conscientious painstaking. All those of our readers who are charged with the duty of providing for the table, are recommended to try them. They are the best in the market.

The Proper Warming of Churches, Schools, and Dwellings.—The following testimonial, in favor of the Gothic Furnace, is given by J. J. Thomas, Esq., senior editor of the *Cultivator and Country Gentleman*, Albany, N. Y.: "I have used the Gothic Furnace in my house ten years. It has not cost a cent for repairs, nor been out of order. I have had three placed in Oakwood Seminary, and these have been in successful use, with satisfactory results, some years. It is the cheapest furnace I know of, because it is the simplest, and for the same reason, it is more easily managed."—*Union Springs Advertiser.*

These furnaces can be obtained of the manufacturer, Alex. M. Lesley, 226 West 23d Street, New York.

Pine Tar Soap.—"Editor of SANITARIAN: Much has been said of late, in journals devoted to the study of diseases of the skin, of the importance of a pure tar soap as an application.

Is the Pine Tar Soap advertised in THE SANITARIAN a reliable article?

Respectfully yours, W. J., M.D.

Boston, Nov. 6th, 1877."

It affords us pleasure to state we have examined and *tried* the Pine Tar Soap referred to, and believe it to be what the advertiser claims for it, a *tar soap*, and the only *tar* soap which has fallen under our observation, the tar being thoroughly saponified. Of its remedial excellence in some skin diseases, its superiority to all other soaps for hospital uses, and its excellent deodorizing and antiseptic properties, we have no question.

Literature.

"The Kindergarten Guide"* con-

*An Illustrated Hand-Book designed for the self-instruction of Kindergartners, Mothers and Nurses. By Maria Kraus-Bœlte and John Kraus. No. 1. *The First* and *Second Gifts*. With 50 illustrations. Paper, $0.35; cloth, $0.65. 2. *The Third, Fourth, Fifth* and *Sixth Gifts*. With 497 illustrations. Paper, $0.70; cloth, $1.00. 3. *The Seventh Gift* (*The Tablets*). With 500 illustrations. Paper, $0.50; cloth, $0.80. 4. *The Connected Slat, Slat-interlacing, Stick-laying*. With many illustrations. 5. *Ring-laying, Thread-game, the Point*. With many illustrations. 6. *Perforating, Sewing*. With many illustrations. 7. *Drawing, Painting*. With many illustrations. E. Steiger, 22 and 24 Frankfort St., New York.

sists of a charming series of little books, illustrated with pleasing pictures of balls, blocks, tablets, etc., representing the material of the Kindergarten System of Education, suited to the amusement, comprehension and instruction of young children. The whole series is to consist of seven numbers, the first three of which are now before us, and we can scarcely conceive of anything better adapted to the purpose. The authors tell us in the preface, that the Guide comprehends the gist of twenty years' experience and study, in the Kindergarten in Germany, England and America; and the work bears evidence in every part of an earnest desire to carry out the ideas Frœbel "founded on observations of *intelligent sensibility*," to amuse without wearing, and to educate without puzzling and vexing the young mind.

Frœbel devoted long years of his rich, earnest life to the careful study of these little ones, and of the best methods of developing them harmoniously, with pleasure to themselves, at the same time preserving the individuality of each, which he sacredly respected.

He realized the influence, on the whole after life, of the tone and bent given to these early years; and he sought, by all his numerous games and exercises, not only to develop duly each muscle of the body, every power of the mind, but also to inculcate love and service to others, reverence and modesty, free obedience and mutual helpfulness, as the greatest happiness, as well as greatest good. The child is not made the prominent point, the centre of all things, but sees himself as part of the whole; he becomes conscious of persons and things in their relation to each other and to himself, and escapes that terrible self-consciousness which so injures and disfigures "fast young America" of both sexes.

Let mothers and nurses always remember that the little songs and movements given by Frœbel are but hints and suggestions, to be infinitely varied by their own ingenuity, and adapted to the wants and tastes of each child. The Guide needs only to be examined by any intelligent mother to be appreciated as the best gift for the child, and the greatest comfort to herself.

Choice of Pursuit * is one of the most important steps in life; and its success depends upon the adaptation of the faculties, temperament and education of the individual for whom it is made. The youth who is guided aright in this respect is guaranteed thereby a happy and successful career; while those who stumble into one pursuit after another for which they are not adapted, will give dissatisfaction to all who employ them, and become restless and dispirited, losing hope, courage, aspiration and ambition, and that sense of independence that lends dignity to character. What a contrast between one who has selected rightly and one who has not! The one is a blessing to himself, his family and the world; the other is either a machine-like workman, having no interest in what he is doing, or is a load to his friends and a burden on the community. Every one can find living illustrations of these truths. Many people with talents, the exercise of which would place them in the front rank of some of the higher callings, are living in obscurity, filling some menial place, which they dropped into by chance or accident, ignorant of the talents with which God has endowed them. And many a man, that would have made a good farmer, is a poor mechanic or professional man, and *vice versa*. The book before us is intended to be a guide to a right choice; and, no matter whether the individual accepts the phrenological basis of the deductions

*Choice of Pursuits; or, What to Do and Why. Describing seventy-five Trades and Professions and the talents and temperaments required for each. Also, how to Educate, on Phrenological principles, each man for his proper work, together with Portraits and Biographies of many successful thinkers and workers. By Nelson Sizer, author of "How to Teach," etc. 500 pp., extra cloth, price $1.75. S. R. Wells & Co., Publishers, 737 Broadway, New York.

or not, the principles inculcated are sound and commendable, and the object a good one.

Wood's Physician's Vade Mecum and Visiting List,* is a strong, Russia morocco-bound pocket book, containing well arranged memoranda pages for daily records throughout the year, an erasable tablet for transient memoranda, decimal system of weights and measures, and a considerable amount of matter which all physicians should carry in their heads instead of their pockets—such as, Asphyxia, A Knowledge of Poisons and their Antidotes, Doses of Medicines, and the Practical uses of Electricity. It is, therefore, a useful book for both doctors and medical students; but it would have been better in two volumes.

"How to Use the Microscope,"† is necessary knowledge for all who pretend to a liberal education. We had occasion to notice and commend the first edition of this book, only a little more than two years ago. We are glad to find that our then expressed good opinion of it has been so well sustained as to call out this new and improved edition. It is literally a text-book for beginners; contains no redundant matter, but everything essential to acquiring a practical use of the microscope, together with instructions for collecting, preparing and preserving specimens.

"The Action of Alcohol on the Body and on the Mind" consists of two lectures, by Benjamin W. Richardson, M.A., M.D., F.R.S., recently delivered at Cambridge and at Oxford, which were published by special request, and have had a very large circulation in the United Kingdom. They are the result of careful and extended researches as to the results of alcohol from a scientific stand-point, and are among the ablest contributions to this branch of the subject.

Dr. Richardson is well known as Fellow of the Royal College of Physicians, and author of the six celebrated Cantor Lectures, which have had a wide circulation both in England and America. These last new lectures are adapted for circulation among all classes, and should have a wide circulation. Bound together in one pamphlet, 12mo, 60 pages, price 20 cents, thick edition, with covers; $15 per hundred, thin paper, without covers. J. N. Stearns, Publishing Agent, 58 Reade Street, New York.

International Review, for November–December, contains Hon. John Jay's answer to the recent final action of the N. Y. Historical Society on "Motley's Appeal to History." The same number contains a sonnet to the memory of Motley, by Bryant. Other articles of special interest are "Hamerton's Twelfth Art Letter," an original criticism by a Frenchman, Chas. Gindrez, on the last *Salon*, in which Thier's and MacMahon are described from an artist's stand-point; a very valuable article on "Islam and the Ottoman Empire," by a Chaplain in the U. S. Navy; General James H. Wilson's criticism of "Dr. Mahan's Critical History of the Civil War"; Horace White on the present phases of the "Currency Question," and much other matter of general interest to the public. For sale by booksellers and newsdealers. Price $1.00 a copy, $5.00 a year, or sent post-paid, on receipt of price, by A. S. Barnes & Co., publishers.

Syllabus of Lectures in Anatomy and Physiology for Students of the State Normal School, at Cortland, New York,* is too elaborate for the pur-

* Arranged and prepared by H. C. Wood, M.D., Prof. Materia Medica and Therapeutics, and of Diseases of Nervous System in University of Pa., etc. Philadelphia: J. B. Lippincott & Co.

† A simple and practical book intended for beginners, by John Phin, editor of *The Technologist*. Fully illustrated, 12mo. Price, 75 cents. The Industrial Publication Company, P. O. Box 4275, 176 Broadway, New York.

*By T. B. Stowell, A.M. Syracuse, N. Y.: Davis, Bardeen & Co.

pose. It is suggestive of a multitude of questions convenient for a teacher; but the research and study necessary to acquire and retain knowledge sufficient to give correct answers, implies an amount of time and application to anatomy and physiology out of proportion to the scope of a State Normal School.

The Sanitarian for November is in many respects a number which should be read by every health and municipal officer in authority in the land, and surely by all thinkers who have the sanitary reform at heart. The articles of the number, the leading ones of which we give herewith, will, by title alone, support this statement: The Faulty Menu of Boarding-schools, by H. P. Fowler, M.D.; A Lesson on House Drainage; Influence of Valleys on Health; American Public Health Association—Abstract of Proceedings; Civil Malpractice and Surgical Jurisprudence, by T. P. C.; House Drainage, by T. P. C.; Pauperism, Vice and Crime; The Public Health; Foreign Health Statistics; Cincinnati School-rooms.—*Sacramento Record-Union.*

. . . . The record of the public health is full and interesting. The discontinuance of this magazine would be a great loss to the public, and to increase its circulation is to do good to one's fellow-men. [Dr. A. N. Bell, Box 1956, New York City.]—*New Haven Palladium.*

Subscribers are reminded that now is the time to make remittances for 1878. A few there are who have not paid for 1877, and from those, in particular, we expect a double portion without delay.

Discontinuances are not made—on orders given without limitation—**until arrearages are paid.** Sending a journal back to the office of publication, or refusing to receive it from the post-office, does not exempt the subscriber from liability to pay for it, up to the time of notification to stop sending it.

Remittances should be made by postal money-order, registered letter, check or draft, payable in New York.

Bound Volumes will be sent, postage paid, to all subscribers from whom we receive the loose numbers of the corresponding year, in good order, free of expense and **one dollar.**

Five Bound Volumes.—A few full sets on hand from the beginning, and current numbers for 1878, postage paid.....$20 00

Single Volumes, bound, postage paid..... 4 00

Annual Subscription..... 3 00

Three Months..... 1 00

Single Numbers, current year.. 30

All communications should be addressed to the Editor, **New York, P.O. Box 1956.**

Books Received.—Department of Agriculture for 1856; Transactions of International Medical Congress; George Muller's Two Addresses relating to Orphan Houses; Health Officer's Report, San Francisco; Analyses of Hydrant and Well Waters of the City of Troy; Proceedings Kings County Medical Society, 1876; Albert H. Smith's Retarded Dilatation of the Os Uteri in Labor; Chapman's Treatment of Diphtheria; Defective Drainage of Dwelling House—Special paper, New York Board of Health; Sheltering Arms Nursery Report; Report of Water Commission of Troy; Woodworth on Quarantine; Commencement of Training School for Nurses; Palmer's New Departure in Medical Teaching; Rapport fait au Conseil Communal, en seance du 1er October, 1877, par le Collége des Bourgmestre et Echevins; Lusk on Puerperal Fever; McClellan's Review of Latest Work of Dr. Max von Pettenkofer; Toner's Medical Biography; Circular of Information—Bureau of Education, No. 1, 1877; International Conference on Education in connection with International Exhibition, 1876; Shew's Letters to Women.

INDEX.

Antiseptics in Surgery..... 40
Adulteration of Bread..... 71
Affections of the Eyes. C. R. Agnew, M. D. 118
Agnew, C. R., M. D. Affections of the Eyes. 118
American Medical Association..... 230
" " " President's Address. Dr. H. I. Bowditch..... 322
American Medical Editors' Association... 329
" Gynecological Society. Dr. J. P. White..... 325
American Association for the Cure of Inebriates..... 429
American Public Health Association. Abstract of Proceedings: W. Dexter, Esq., E. S. Chesbrough, Esq., H. A. Johnson, M. D., A. L. Gihon, M. D., G. L. Andrews, M. D., Azel Ames, M. D., N. S. Davis, M. D., E. Andrews, M. D., and others..... 493
Allen, Nathan, M. D., LL. D. Vital Statistics 241
Amendment of the By-Laws. Medico-Legal Society. D. S. Riddle..... 269
Arrest of Zymotic Diseases. E. G. Janeway, M. D..... 404
Adams, J. Q., M. D. "Sanitary Regulations" of Putnam Co., N. Y..... 460
Anatomist..... 287

Black, J. R., M. D. Public Health Reform. 1
" " " Laws of Heredity, etc. 326
Bermuda..... 42
Brooklyn's Recent Calamity..... 42
Brooklyn and Her Suburbs..... 372
" " " Precincts..... 421
" 379
Bad Air..... 110
Boston Board's Directions for Scarlet Fever..... 141
Blind Persons in New York..... 288
Brooklyn Rink for Roller Skating..... 287
Bell, A. N., M. D. Marine Hygiene on Board Passenger Vessels..... 145
Bell, A. N., M. D. Tuberculosis in Milch Cows..... 327, 337
Borax Soap..... 281
" and Borax Soap..... 524
Benefits to be Derived from Separating Honest Poverty from Criminal Poverty 307
Birthday Party..... 170
Bowditch, H. I., M. D. President's Address, Am. Med. Association 322
Battery Baths..... 381
Bartlett, W. R., M. D. Causes of Disease in Country Houses..... 410
Bailey, T. H., M. D. Malarial Diseases of Putnam County..... 456
Bradford, E. H., M. D. Health of Rowing Men..... 529
Boothly, E. L., M. D. Vital Statistics.... 539

BIBLIOGRAPHY:
" Transactions of the Texas Medical Association..... 44
" Transactions of the Tennessee Medical Society..... 45
" Transactions of the Medical Society of the District of Columbia..... 48
" Transactions of the Medical and Chirurgical Faculty of Maryland..... 95
" Transactions of the American Gynecological Society..... 383
" Annual Report of the Managers of the State Lunatic Asylum, Utica, N. Y..... 46
" Smithsonian Contributions to Knowledge. (Ch. A. Schott) 46

BIBLIOGRAPHY:
" Living too Fast. (Wm. T. Adams)..... 47
" Young America Abroad. (Wm. T. Adams)..... 47
" Hours with John Darby..... 47
" The Young Trail Hunters. (Samuel W. Cozzens)..... 47
" Frederick Froebeld. (Matilda H. Kriege)..... 47
" Flaxie Frizzle. (Sophie May) 48
" Reading Club and Handy Speaker. (Geo. M. Baker).. 48
" Annual Register..... 48
" Reparative Surgery. (Dr. Gurdon Buck)..... 93
" Healthy Skin. (Erasmus Wilson, F. R. S., F. R. C. S.)... 94
" Electric Baths..... 94
" Coughs and Consumption, and Diet in Disease. (Horace Dobell, M. D., F. R. M. C. S.) 94
" Pubic Libraries in the U. S. A. 95
" Water Supply and Drainage. (Prof. W. H. Brewer)..... 95
" American Naturalist..... 96
" Living Age..... 96
" Home Journal..... 96
" Report of the Commissioners of Education for the year 1875..... 142
" Magazine of American History, with Notes and Queries..... 143
" Diseases of the Skin. (Louis A. Duhring, M. D.)..... 143
" International Review..... 143, 569
" Cleveland Health Journal. E. R. Riopel, A. M., M. D.)..... 144
" Prevention of Cruelty to Children..... 144
" Illustrated Annual of Phrenology..... 144
" Scholars' Hand-book of Household Management and Cookery. (W. B. Tegetmier).... 144
" Prevention of Cruelty to Animals..... 191
" Vivisection..... 191
" Nutrition in Health and Disease. (James H. Bennetd, M. D.)..... 192
" Management and Treatment of the Insane. (Dr. Nathan Allen)..... 234
" Bureau of Medicine and Surgery 235
" Health Resorts of Europe and Africa. (Dr. Maddin)..... 236
" Bergman *vs.* "Dr." Volker. (Dr. C. C. F. Gay).....236, 237
" State Society Transactions.... 237
" Public Health. (Edmund A. Parkes, M. D..... 429
" Legal Medicine..... 430
" The Medical Register of New York..... 431
" Sanitary Engineering. (J. Bailey Denton, F. G. S.)..... 478
" Sanitary Conditions in City and Country Dwelling Houses. Geo. E. Waring, Jr. 480
" Toner Lectures..... 480
" Scenes and Reminiscences of the Civil War. (Rear-Admiral Walke, U. S. N.) 381
" Critical History of the American War. (A. Mahan)..... 381

BIBLIOGRAPHY:
" Annual Report of the Supervising Surgeon-General of the Marine Hospital. (J. M. Woodworth, M. D.)..... 382
" Public Baths and Wash-houses. (Richard Metcalfe, M. D.)... 382
" Fruit and Bread. (Gustave Schlickeysen)..... 383
" Vaccination. (A. C. Chapin, M. D.)..... 384
" Scientific Basis of Delusions. (Geo. M. Beard, M. D., A. M.) 384
" Popular Science Monthly Supplement..... 283, 527
" Life Insurance Question—International Review..... 283
" Magazine of American History 284
" Atlas of Skin Diseases. (Louis A. Duhring, M. D.)..... 285
" Mothers and Daughters. (Tullio Suzzara Verdi, A. M., M. D.) 285
" Winebibber's Temperance Society..... 284
" Notes on Burning Theaters. (J. M. Toner, M. D.)..... 286
" Medical Libraries of Boston. (Dr. Chadwick)..... 286
" Kidneys. (Geo. B. Fowler, M. D.) 286
" Syphilis. (E. L. Keys, A. M., M. D.) 287
" General Index to New York Medical Journal..... 287
" Sanitary Engineering. (Baldwin Latham)..... 525
" Beauty. (T. S. Sozinskey, M.D.) 525
" American Naturalist..... 526
" Vick's Illustrated Monthly.... 526
" Functions of a General Police Force for the Extinction of Fires. (E. Chadwick)..... 527
" Notes on the Epidemiology of Ohio. (T. Minor, M. D.).... 528
" Public Health. (A. G. Field, M. D.)..... 528
" How to Use the Microscope. (John Phin)..... 569
" Action of Alcohol on the Body and on the Mind. (Benjamin W. Richardson, M.D., F.R.S.) 569
" Syllabus of Lectures in Anatomy and Physiology for Students of the State Normal School. (T. B. Stowell, A.M.) 569
" Kindergarten Guide. (Maria Kraus-Boelte and John Kraus)..... 567
" Choice of Pursuits (Nelson Sizer)..... 568
" Physician's Vade Mecum. (H. C. Wood, M.D., Prof., etc.). 569
Cellars..... 558
Consolation from Statistics..... 565
Civic Cleanliness—Boston. E. H. Janes, M. D..... 11
Calisthenics. Philo..... 87
Corbally, T. P., M. D. Deformities and their Relation to Hygiene..... 73
Corbally, T. P., M. D. Deformities in Relation to Hygiene..... 214
Conservative Medicine and the Mission of THE SANITARIAN. E. Harris, M. D... 196
Chadwick, Edwin, Esq. With Portrait.... 176
Cabell, J. L., M. D. THE SANITARIAN..... 185
Comparative Mortality Statistics—Military Surgeons..... 252
Carroll, A. L., M. D. Plea of Insanity..... 258
Confidential Communication to Physicians 269
Corrigenda..... 270
Crabs..... 272
Constantinople..... 281
Comfort for the Feet..... 281
Chamber of Life Insurance Reports..... 314
Cabell, J. L., M. D. Etiology of Enteric Fever..... 326
Comegys, Dr. State Medicine..... 327
Cistern Water. Col. Waring..... 334
Cremation of all Table and Kitchen Refuse 334
Criminality. W. G. Stevenson, M. D...353, 390
Causes of Disease in Country Houses. W. R. Bartlett, M. D..... 410
Consultations on Sanitary Subjects..... 528
Chief Results. E. Harris, M. D..... 502
Civil Malpractice and Surgical Jurisprudence. T. P. C..... 504
Cincinnati School Rooms..... 521
City of Health—Garden City. Long Island. 211
Directions for Preventing the Spread of Infectious Diseases. J. M. Maclagan, M. D 13
Diseases of our Own Causing..... 72
Deformities and their Relation to Hygiene —Cosmetics and High-heeled Boots. T. P. Corbally, A. M , M. D..... 73
Deformities in Relation to Hygiene—Hip-Joint Disease. T. P. Corbally, A. M., M. D..... 214
Disinfecting Pastiles..... 90
Disinfectants—when they should be used 110
Duty of the Health Department. Moreau Morris, M. D..... 162
Danger of Accumulated Sewerage. P. G. Robinson, M. D..... 324
Disinfection..... 380
Disinfection in New Orleans..... 477
Doctors in the English Army..... 335
Disease and Damp Soils—Public Health... 537

Eastman, H. G. Water Supply of New York..... 51
Episcopal Longevity..... 230
Experts in Legal Proceedings. James Appleton Morgan..... 268
Early Death of Teachers..... 314
Etiology of Enteric Fever. Dr. J. L. Cabell 326
Errata..... 336
Eucalyptus..... 352
Educational Notes. Richard McSherry, M. D..... 362
Erie Cow Diseased..... 522
Encaustic Tiles..... 468
Effects of Breathing Foul Air 553

Foreign Health Statistics, 41, 85, 137, 186, 232, 276, 332, 372, 428, 476, 519
Fire on the Hearth..... 43
Fatal Steam Boiler Explosion..... 114
Fire-Proof Buildings. E. F. Peck, M. D.. 171
Foreign Hospitals. R. R. McIlvaine, M. D. 303
Fishy Odor of Water..... 334
Faulty Menu of Boarding-Schools. H. P. Fowler, M. D..... 481
Fowler, H. P., M. D. Faulty Menu of Boarding Schools..... 481
Fetid Feet..... 445
Farr, Wm., M. D., F. R. S., D. C. L. With portrait..... 253
Female Chemist..... 371

Gihon, A. L., A. M., M D. Sanitary Reform in Ship Life..... 97
Garrish, J. P., M. D. Necessity of Increased School Accommodations..... 159
Gardner, J. T. Relation between Topographical Surveys and the Study of Public Health..... 385

Griffiths, W. C., M. D., Variola Vaccination..... 407
"Go South for the Winter."..... 566

Hecker's Self-Raising Flour..... 566
Ham Curing..... 567
Hamilton, Prof. F. H., M. D., LL. D Proceedings of Medico-Legal Society..... 117
Harris, Elisha, M. D., Conservative Medicine and the Mission of the Sanitarian. 126
Health Better than Wealth..... 213
How to Preserve and Restore Flowers.... 257
How a Woman Orders a Chest..... 308
Haupt, Lewis M. Street Pavements..... 309
Hunt, E. M., M. D. State Medicine and Public Hygiene..... 325
Harris, Elisha, M. D. Results of State Legislation on Public Health..... 327
Harris, Elisha, M. D. Chief Results..... 502
How to Keep Cool of Hot Nights..... 381
House Drainage. T. P. C..... 509
Healthy Houses..... 446
How Eggs are Preserved by a New Process 463
Hanging Baskets and Window Boxes..... 474
Health of Rowing Men. E. H. Bradford, M. D..... 529
Hygiene at Amherst College. Prof. E. Hitchcock..... 547
Hitchcock, E., Prof. Hygiene at Amherst College..... 547

Insanity in the United States..... 20
Improved Garbage Boxes..... 44
Importance of a State Board of Health.... 183
Influence of Civilization on the Duration of Life. C. T. Lewis..... 193
Influence of Valleys on Health..... 492

Janes, E. H., M. D. Civic Cleanliness.... 11
Jennings' Sanitary Appliances..... 91
Jewell's Cereal Food..... 190, 566
Janes, E. H., M. D. Sanitary Questions Concerning Abattoirs and the Slaughtering Business in New York..... 315
Janeway, E. G., M. D. Arrest of Zymotic Diseases..... 404

Kerosene Lamps. Wiener Medicinische Presse..... 172
Kindness to Animals..... 348

Longevity of Invalids..... 81
Life Insurance Companies..... 82, 129
Life Insurance Investigation..... 230
Life Insurance on Trial..... 184
Lactometer Milk..... 86
Lewis, C. T. Influence of Civilization on the Duration of Life..... 193
Loring, E. G., M. D. School Hygiene.... 204
Leaden Pipe for Distributing Water for Domestic Purposes..... 280
Light in Stables..... 312
Litigation of Life Insurance Claims..... 313
Laws of Heredity, etc. J. R. Black, M. D.. 326
Living without Food..... 459
Legal Dilemma..... 270
Lesson on House Drainage..... 491

Made Dishes..... 546
Maclagan, J. M., M. D. Directions for Preventing the Spread of Infectious Diseases..... 13
Medico-Legal Society Proceedings—Personal Identity. James Appleton Morgan, Esq..... 21
Medico-Legal Society Proceedings—Prof. H. Hamilton, M. D., LL. D..... 117
Medico-Legal Society—Permanent Commission..... 336
Medico-Legal Society..... 508
Morgan, J. A. Personal Identity..... 21
Morgan, J. A. School Hygiene..... 155
Morgan, J. A. Experts in Legal Proceedings..... 268
Marine Hygiene on Board Passenger Vessels. A. N. Bell, M. D..... 145
Milk-Beer. Journal d'Hygiene..... 153
Madeira as a Health Resort. Harpers' Magazine..... 154
McIlvaine, Robert R., M. D. Proportion of Blind to Population..... 160
McIlvaine, Robert R., M. D. Foreign Hospitals..... 303
Morris, Moreau, M. D. Duty of the Health Department..... 162
Milk of Magnesia..... 190
Miller, J. F. School Hygiene..... 208
More About Garden City as a City of Health 273
Marriage in Ireland..... 335
McSherry, Richard, M. D. Educational Notes..... 362
Medical Society of the State of New York. 373
Murray's Charcoal Tablets..... 524
Malarial Diseases of Putnam County. T. H. Bailey, M. D..... 456
Massachusetts State Board of Health..... 464
Model Tenement House..... 253
Made Dishes..... 546
Medicine in Kentucky..... 288

Nashville..... 565
New York for 1876..... 86
" " Quarantine, Annual Report of Health Officer for 1876. S. O. Vanderpoel, M. D..... 115
New York Public Charities and Corrections. Samuel A. Raborg, M. D..... 289
Necessity of Increased School Accommodations. Wm. A. Owen; J. P. Garrish, M. D..... 158
Nervousness and Nervines. Casseli's Magazine..... 163
Newell, T., M. D. What Changes does Physiology Demand in our School System..... 164
Napier, Lord. Sanitation in India..... 210
New Hydraulic Elevator..... 380
Nicotine..... 403

O'Sullivan, R. J., M. D. More Room and Better Arrangements..... 124
O'Sullivan, R. J., M. D. School Hygiene.. 209
Owen, Wm. A. Necessity of Increased School Accommodations..... 158
Outdoor Sleepers..... 292
Officers for the Ensuing Year..... 329
Only a Baby..... 453
Opium Antidote..... 287

Pavements..... 562
Public Health, 41, 85, 137, 186, 232, 276, 332, 372, 427, 475, 519, 564
" " Reform. J. R. Black. M. D. 1
Philo, School Room Crowding..... 111
" Calisthenics..... 37
" Sanitary Knowledge for School Children..... 271
Philo, School Luncheons..... 452
Prize in Industrial Hygiene..... 128
Probabilities of Living to be 100 Years Old—The Longest-Lived People. ... 131
Proportion of Blind to Population. Robert R. McIlvaine, M. D..... 160
Peck, E. F., M. D. Fire-Proof Buildings.. 171
Population of the Earth and Progress of Hygiene..... 175
Physical Benefit of Sunday..... 182
Plea of Insanity. A. L. Carroll, M. D..... 258

Political Influence. Simon Sterne..... 301
Population of Holland..... 336
Pauperism, Vice and Crime..... 511
Preservation of Fruit..... 539
Public Schools of Cincinnati..... 477
" " Aid Society..... 526
Pettenkofer, Max Josef V., with Portrait. T. P. C..... 367
Poor and the Vicious..... 293
Pine Tar Soap..... 567

Record of Disbursements..... 231
Riddle, D. S. Amendment of the By-Laws Medico-Legal Society..... 269
Raborg, S. A., M. D. New York Public Charities and Corrections..... 289
Revision of the U. S. Pharmacopœia. Drs. E. R. Squibb and Wood..... 323
Robinson, P. G., Dr. The Danger of Accumulated Sewage..... 324
Results of State Legislation on Public Health. Dr. Elisha Harris..... 327
Rocky Mountain Association..... 331
Relation between Topographical Surveys and the Study of Public Health. J. T. Gardner..... 385
Remarkable Artesian Well..... 389
Rochester. Relation of Typhoid Fever to Contaminated Well-Water..... 522
Ray, Isaac, M. D. Tetamentary Capacity. 433

Sanitary Advertisements..... 336
Sanitary Questions concerning Abattoirs and the Slaughtering Business in New York. E. H. Janes, M. D..... 315
Sanitary Carbon..... 10
Sanitary Progress in Germany..... 64
Sanitary Reform in Ship Life. A. L. Gihon, M. D..... 97
Sanitary Knowledge for School Children. Philo..... 271
Sanitary Inspection of Schools. W. C. Wey, M. D..... 408
"Sanitary Regulations" of Putnam County, N. Y. J. Q. Adams, M. D..... 460
Sanitation in India. Lord Napier..... 210
SANITARIAN. J. L. Cabell, M. D..... 185
SANITARIAN..... 268
SANITARIAN—Conclusion of Vol. 5—Prospectus Redivivus..... 554
Service Pipes and Water Distribution in City Houses. James C. Bayles..... 43
Student's Lamps..... 43
Safety of Ships, and those who travel in them. J. M. Woodworth, A. M., M. D. 65
Sunlight Necessary to Health..... 70
State Board of Health for N. Y..... 88
State Board of Health for N. Y., and some of the reasons for it..... 132
State Boards of Health..... 225
Small-Pox..... 89
School Room Crowding—Brown's Dream. Philo..... 111
School Hygiene—Compulsory Education. J. A. Morgan, Esq..... 155
School Hygiene. E. G. Loring, M. D..... 204
School Hygiene. J. F. Miller Esq..... 208
School Hygiene. R. J. O'Sullivan, M. D. 209
School Luncheons. Philo..... 452
Stewart Memorial Church..... 275
Sterne, Hon. Simon. Political Influence. 301
Street Pavements. Prof. Lewis M. Haupt 309
Street Pavements. J. P. C..... 419
Squibb, E. R., M. D. The Revision of the U. S. Pharmacopœia..... 323
State Medicine and Public Hygiene. E. M. Hunt, M. D..... 325
State Medicine. Dr. Comegys..... 327
Sutton, Dr. Trichinæ..... 328
Statistics of Deaf Mutes..... 335
Santa Barbara as a Health Resort. A. B. Stuart, M. D..... 349

Stuart, A. B., M. D. Santa Barbara as a Health Resort..... 349
Stevenson, W. G., M. D. Criminality..... 353
Superb Ventilation..... 361
Solubility of the Salts of Lead..... 366
Sewer Gas Traps..... 380
Surf Bathing at Long Branch..... 380
Sewage of Atlanta..... 424
Stewart's Sewer Gas Traps..... 428
Stoddard, E. V., M. D. Typhoid Infection of Drinking Water..... 454
Sensible Editor..... 334
Simon Testimonial Fund..... 527
Salting the Streets..... 192
Smithsonian Institution..... 282
Sound Learning..... 525
Subscribers Reminded..... 570

Three Good Houses. Christian Union... 173
Transaction of the Association for 1876... 230
Toner, J. M., M. D. Water Supply of Cities..... 255
Tin-Lined Iron Pipe..... 261
Tuberculosis in Milch Cows. A. N. Bell, M. D..... 327, 387
Trichinæ. Dr. Sutton..... 328
Toxicology—Salts of Copper..... 379
Testing Flour..... 503
Testamentary Capacity. Isaac Ray, M. D. 433
Typhoid Infection of Drinking Water. E. V. Stoddard, M. D..... 454
Temperature and Humidity of the Air at Different Heights. Nature..... 545
Toledo..... 565

U. S. Vessels Lost and Missing During the Year 1876..... 182
Unfortunate Women..... 306

Village Drainage..... 12
Vanderpoel, S. O., M. D. New York Quarantine..... 115
Vital Statistics..... 188, 236
Vital Statistics. Nathan Allen, M. D., LL. D..... 241
Vital Statistics. E. L. Boothly, M. D..... 539
Variola Vaccination. W. C. Griffiths, M.D. 407
Virchow, Rudolf L. C. With portrait. T. P. C..... 469
Vicious Plaster..... 321

Warming Churches, Schools and Dwellings..... 566
Water Supply of New York. Hon. H. G. Eastman..... 51
Water Supply of Cities. J. M. Toner, M. D. 255
Water Filters..... 379
Woodworth, J. M., M. D. Safety of Ships and those who Travel in Them..... 65
Warming Street Cars..... 90
Wash Stands and House Drain Traps..... 90
Winter Health Resorts..... 92
Watch the Children's Feet..... 125
Worse than the Fever..... 377
What Changes Does Physiology Demand in our School System? T. Newell, M. D. 164
Wood Rendered Incombustible. Boston Journal of Chemistry..... 172
Woodward's Soil Pipe Valve..... 190
What Should be the Policy of a Great City Towards its Poor?..... 294
Wood, H. C. The Revision of the U. S. Pharmacopœia..... 324
Waring, Col. Cisterns Water..... 334
Wey, W. C., M. D. Sanitary Inspection of Schools..... 408

Yellow Fever..... 228
Yellow Fever Case in New York..... 520

Zymotic Diseases in New York..... 454